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SERIES 3, Vol. 18, No. 7

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AMERICAN JOURNAL OF OPHTHALMOLOGY

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Subscription price in United States ten dollars yearly. In Canada and foreign countries twelve dollars.

Published monthly by the George Banta Publishing Company, 450 Ahnaip Street, Menasha, Wisconsin, for the Ophthalmic Publishing Company, 640 S. Kingshighway, Saint Louis, Missouri

Editorial Office: 640 S. Kingshighway, Saint Louis, Missouri

Entered as second class matter at the post office at Menasha, Wisconsin

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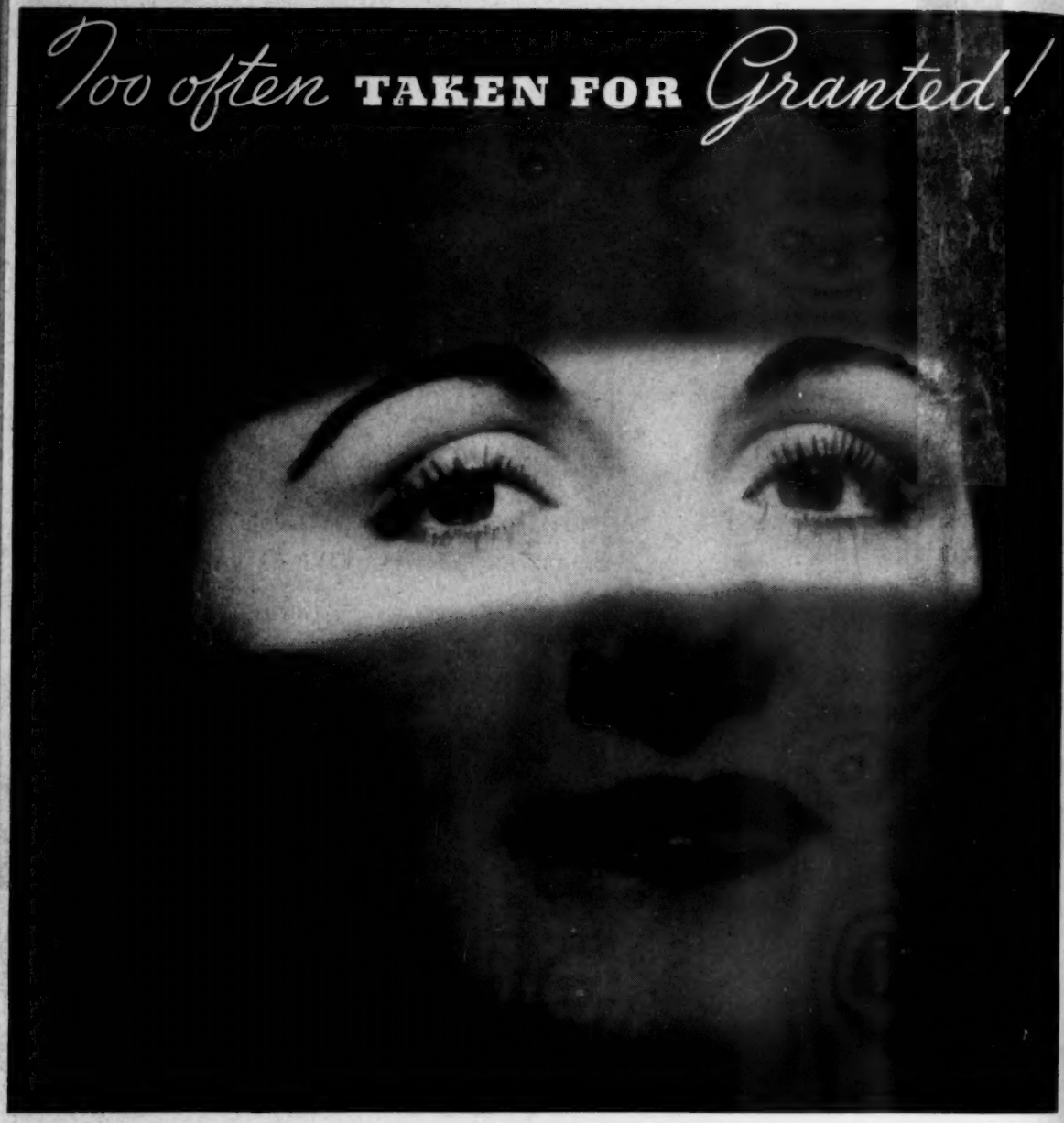

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AMERICAN JOURNAL OF OPHTHALMOLOGY

VOLUME 18 JULY, 1935 NUMBER 7

BILATERAL TEMPORAL PTERYGIA

PAUL H. REED, M.D., AND LEO L. MAYER, M.S., M.D.
CHICAGO

Temporal pterygium is rarely unaccompanied by nasal pterygium; bilateral temporal growths alone were not found recorded in the literature. The following description may therefore be the first report of the appearance. From the Illinois Eye and Ear Infirmary, Service of Dr. T. D. Allen. Read before the Chicago Ophthalmological Society, February 18, 1935.

The reason for the report of this condition is its extreme rarity. In a perusal of the available literature concerning pterygium in general, there is a marked contrast in the few reports made during the past thirty years and the abundance of material set in print in the previous half century. Undoubtedly there are two basic causes for this situation. The first is the fact that due to the ingenuity of McReynolds[1] a very satisfactory method for therapy is at hand. Secondly, the usual nasal pterygium is so commonly found that it does not warrant more frequent comment.

In the modern textbooks of ophthalmology little attention is directed to the temporal pterygium.

The American Encyclopedia[2] quotes Yarr[3] as stating that he had never seen a single temporal pterygium. Ball[4] refers to it as follows, "generally of the outer or inner canthus. . . . The same eye may present two pterygia, one on the nasal, the other on the temporal side." Friedenwald[5] remarks, "It occurs almost always on the nasal side of the cornea." Norris and Oliver[6] say, "It is usually situated to the nasal side of the cornea but is sometimes found to the temporal side." Atkinson[7] in a paragraph on the favorable site of pterygium concurs in the opinion that it is usually found to the nasal side. In de Schweinitz's[8] text this statement is found, "one or both eyes may be affected. Its most usual situation is at the inner side of the eyeball . . . more rarely it develops at the outer . . ." Among the older texts Noyes[9] has this to say, "while the favorite site is the inner side of the eyeball, the outer angle is next in frequency in giving it origin. Sometimes one may be present at the same time in both situations." Parson's Pathology[10] gives the following: " . . . and when single is always upon the nasal side. When double, the temporal one has developed later." In May's[11] practical text one finds, "It is generally situated to the *inner* (italics his) side of the cornea, less frequently to the outer side or in both situations. It may occur in one or both eyes." Axenfeld[12] makes no mention of the position of the pterygium. Fuchs[13] records the condition as follows: "It is found most frequently on the inner side of the cornea. When there is already one in this spot another may form on the outer side also." In the latest of the German texts, Schieck[14] remarks that the true pterygium never is noted alone on the temporal side.

A survey of the reports on pterygium in the periodicals failed to reveal a single case in which bitemporal growths alone were found. Bennett[15] reported a double pterygium, one with two heads but this was on the inner side. Yano[16] had two unusual cases. In the one a cyst formed after a period of ten years; in the other, the pterygium was joined with the conjunctiva of the lower lid. Schöninger[17] in her review finds that the pterygium grows in the area of the conjunctiva between the open lids, mostly on the nasal and seldom on the temporal side.

Bistis[18] has given us the latest complete review of the subject. He has little

to say concerning the location. The question of the etiology is discussed in detail but we are not concerned with that here.

Case report. M.Y., a Chinese male, aged 49 years, had noticed for the past four years that both eyes were at times red and swollen on the temporal side of the cornea. The past history is irrelevant except for the fact that the patient had been working in a laundry for the last 20 years. There was no history of injury, and as far as the patient could remember no other members of the family had had a similar affliction.

As the condition was entirely limited to the eye, a thorough physical examination was not made.

The growths on both eyeballs were very similar. Beginning about 2 mm. from the outer canthus the bulbar conjunctiva was thickened and red, this process extending some 5 mm. in the vertical direction. From its origin the growth assumed a winged shape as it approached the cornea, narrowing its width as it neared the limbus and spreading out again as it covered the cornea. The growth in the left eye appeared thicker and seemed to spread out more in the vertical axis of the cornea. There was absolutely no evidence of any growth in either eye on the nasal side of the cornea. The visual acuity was 20/20 for the right eye and 20/65 for the left eye. Refraction failed to enhance this vision. Examination of the eyes with mydriasis resulted in normal findings throughout the other media and the fundi. Under local anesthesia a plastic operation using the McReynold's technic was done on both eyes at the same sitting. Healing was without incident. The accompanying illustrations* are stereophotographs taken before the operation. Visual acuity was not changed.

Fig. 1 (Reed and Mayer). Stereophotograph of the left eye, showing temporal pterygium and absence of any nasal involvement.

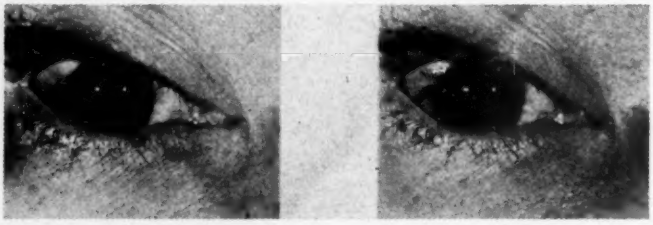

Fig. 2 (Reed and Mayer). Stereophotograph of the right eye, showing temporal pterygium and absence of any nasal involvement.

104 S. Michigan Ave.

* These pictures were taken through the courtesy of Belgard-Spero, Inc., of Chicago.

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ANISEIKONIA

Some Clinical Observations

WENDELL L. HUGHES, M.D.
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A general outline of what is meant by aniseikonia is given, with reports of several patients treated. Illustrations show graphically the relative size and shape of the ocular images, and the manner in which the findings on the examinations were translated into lenses is given in many of the cases. Symptoms of this condition and other factors regarding it are shown.

It is much more common than has previously been expected and the correction of this condition must be one of the procedures which the modern ophthalmologist must be prepared to handle if he is to give full service in difficult cases.

Aniseikonia is the term applied to the condition of asymmetry of the visual images. It is well known that a difference in size of the two images exists in antimetropia and anisometropia (including unilateral aphakia). It is not so well known that independent of a difference in refraction, an inequality in size and shape of the images is frequently present, can be measured, and is correctible by glasses, bringing about relief of symptoms.

That this condition is much more common than has been previously suspected has been demonstrated. The difficulty in fusing the two dissimilar images is a cause of continuing discomfort, in many instances after accurate correction of errors of refraction and muscle anomalies. The principle of the lenses designed to correct aniseikonia is based on the fact that the greater the curvature and thickness of plus lenses, the larger the size of the image.

The following table* shows the curvature and thickness of zero-power lenses necessary to obtain magnification of amounts up to 5 percent effective for light coming from 20′ distance:

Magnification	Inside Curvature	Thickness
percent	diopters	mm.
1.00	—7.50	2.03
2.00	—9.50	3.22
3.00	—11.50	3.98
4.00	—13.50	4.52
5.00	—15.50	4.91

These variations in base curvature and thickness of the power lenses do

* From Department of Research in Physiological Optics, Dartmouth Medical School, Hanover, N.H.

not alter the refraction but do change the size of the image. If the magnification is desired in one meridian only, the lens is ground curved in only one meridian, both surfaces being approximately parallel.

If one wishes to get an idea of the way things appear to a person with aniseikonia, he may wear a pair of zero power lenses, one flat and the other, ground on the specifications given in the table above, to give a difference of two, three, or four percent. If he wears them for some time he will develop some of the symptoms of aniseikonia. It is estimated that about 10-15 percent of persons who come to an oculist for examination for glasses have a measurable amount of asymmetry of the visual images.

My interest in the treatment of differences in the relative size of the ocular images (aniseikonia) was greatly increased, when in 1932, having sent a patient, who had had a great deal of trouble with discomfort of his eyes, to the Department of Physiological Research at Dartmouth Medical School for analysis, a comfortable pair of glasses was prescribed. This I had not been able to do. He had always had great discomfort in using his eyes, which glasses had not helped. His case report follows:

Mr. J. L. N., aged 38 years, complained of headaches, severe especially on use of the eyes at near range, inability to focus things quickly or for prolonged periods, photophobia, and burning.

Examination revealed: Vision without correction: R.E. 20/100, L.E. 20/50.

Refractive correction with and without homatropine cycloplegia was:

R.E. —0.25 D.sph. ⌯ —1.12 D. cyl. axis 3° = 20/15 P.P. (accom.) R.E. 120 mm.

L.E. —0.12 D.sph. ⌯ —0.87 D. cyl. axis 48° = 20/15 P.P. (accom.) L.E. 120 mm.

Muscles: Exophoria at 20′ = 1Δ; exophoria at 13″ = 6Δ; right hyperphoria at 20′ = 0.50Δ (increasing slightly in the lower field); incyclophoria 3-5° (greatest in lower right field).

Prolonged occlusion test (10 days) showed an increase in the exophoria, amounting to 4Δ at 20′ and 10Δ at 13″. With the right eye covered for 5 days, the hyperphoria remained unchanged; with the left eye covered for 4 days, 0.75Δ of left hyperphoria was revealed.

He was sent to the Department of Physiological Research at Dartmouth where it was found that aniseikonia existed.

Eikonic measurements showed the right image 1.00 percent larger over-all (in both meridians) than the left image and 1.25 percent greater difference (2.25 percent total) in the horizontal meridian than in the vertical (see fig. 1). The following prescription was given:

R.E. —0.75 D.sph. ⌯ —1.12 D. cyl. axis 3° (—3.00D. base curve)

L.E. —0.50 D.sph. ⌯ —0.87 D. cyl. axis 48° (—9.00D. base curve) ⌯ 1.25% M. axis 90°.

The wearing of these lenses resulted in almost complete relief from headaches, partial relief of photophobia, and much better depth sense. This latter was graphically described by the patient saying that an avenue of trees seemed to open out before him with a depth that he had never appreciated before.

He maintained relative comfort with his eyes until recently, when he noticed a slight return of headaches. A recent check-up on the ophthalmo-eikonometer installed at New York University, showed the following change (see fig. 1A):

R.E. —0.62 D.sph. ⌯ —1.62 D. cyl. axis 180° ⌯ 1.00% M. axis 180°

L.E. —0.62 D.sph. ⌯ —1.12 D. cyl. axis 46° ⌯ 1.25% M. axis 90°

Comment. This man's ocular discomfort was so great, that he had almost decided to give up his work, as it entailed concentrated use of the eyes. His refraction had been tested many times, always with the same result; namely, no relief. In the past two years, since the correction of his aniseikonia, he has been able to carry on with much greater ease and really to enjoy his work.

Case 2. Mrs. P. A. W., aged 34 years, complained of headaches and tiring of

the eyes, especially on reading, but frequently at times when not reading much.

Examination revealed: Refractive correction (checked under cycloplegia):

R.E. —4.75 D.sph. ⌯ —0.75 D. cyl. axis 180° = 20/25+ P.P. (accom.) 120 mm.

L.E. —7.75 D.sph. ⌯ —1.25 D. cyl. axis 93° = 20/25+ P.P. (accom.) 120 mm.

Muscle test: Exophoria at 20′ = 3Δ; exophoria at 13″ = 5Δ to 12Δ; left hyperphoria at 20′ variable 1.50Δ to 3Δ; left hyperphoria at 13″ = 5Δ (increasing in left lower field). Otherwise the findings were normal.

The wearing of the above correction with 2.00Δ of vertical prism resulted in very little improvement in symptoms. She was taken to Dartmouth where measurements on the ophthalmo-eikonometer revealed that to equalize the size of the images at 20′ the left one needed to be enlarged by 2.50 percent in the vertical axis and 6.00 percent in the horizontal; at near range the left image was smaller by 2.25 percent and 5.00 percent in the vertical and horizontal meridians, respectively (see fig. 2). This latter correction was prescribed. The patient said these were the most comfortable lenses she had ever had. She could read as much as she wished, with practically no discomfort.

The surprising thing was that measurement of her muscles, while wearing these lenses, showed a marked reduction in the heterophoric condition; exophoria at 20′ and 13″ being reduced to 1Δ and 5Δ, respectively, and the left hyperphoria to 0.25Δ. This phenomenon has been repeatedly noticed. The reason for it has not been ascertained as yet.

The following is a report of the findings of some of the more recent cases examined on the ophthalmo-eikonometer at New York University, since its installation in February, 1934. Most of these patients had been unrelieved of their symptoms by previous procedures, accurate refraction, exercises, etc., and were suspected of having an aniseikonia (difference in size or shape of one visual image in relation to the other). It is too soon to judge final results, as yet, in these cases. The report will therefore be limited chiefly to findings.

Case 3. Mrs. R. H., aged 27 years, complained of discomfort, pulling sensation, tiring of eyes, and burning. She was wearing: R.E.—1.25 D.sph.; L.E.—1.25 D.sph. ⌯ —1.00 D. cyl. axis 180°.

Examination revealed: Practically identical findings:

R.E.—1.37 D.sph. = 20/15

L.E.—1.25 D.sph. ⌯ —1.25 D. cyl. axis 180° = 20/15

Muscle test: Exophoria at 20′ = 0Δ; exophoria at 13″ = 3Δ; no hyperphoria.

X-ray examination of sinuses was negative. Two infected teeth were found which were removed. The conjunctiva was treated locally with little or no improvement. Complete general physical examination was normal. A prolonged occlusion test revealed a right hyperphoria of 0.75Δ and an increase in the exophoria. No relief was experienced from the correction of this by a 1.50Δ base-in prism, in each lens and 0.50Δ base-down, in the right eye.

The ophthalmo-eikonometer tests showed the following:

R.E. —1.37 D.sph. ⌯ 1.25% O.A. ⌯ 1.25% M. axis 90° (near and distance the same)

L.E. —1.25 D.sph. ⌯ —1.25 D. cyl. axis 180°

The right image was 1.25 percent smaller vertically and 2.50 percent smaller in the horizontal meridian. The prescription was made up as follows:

R.E. —1.37 D.sph. (plano base) and 2.25% over-all (fit-over lens)

L.E. —1.25 D.sph. ⌯ —1.25 D. cyl. axis 180° (ground on +1.25 D. base curve, cyl. on ant. surface) and 0.50% M. axis 90° (fit-over lens)

The patient obtained partial relief.

Case 4. Mr. F. V. C., aged 49 years, complained of headaches, greater on near use of the eyes, and photophobia.

Examination revealed:

R.E. +6.00 D.sph. ⌯ +1.75 D.cyl. axis 135° = 20/20. Add +1.50

L.E. +6.50 D.sph. ⌯ +2.00 D. cyl. axis 45° = 20/30+ Add +1.50

Muscle test: Esophoria at 20′ = 4Δ; exophoria at 13″ = 12Δ.

A prescription was given with 3.00Δ, base out, for distance and 6.00Δ, base in, for near. While these lenses gave him more comfort than his last pair for distance, reading was uncomfortable. Aniseikonia (asymmetry of retinal images) was suspected and found when tested on the ophthalmo-eikonometer.

Ophthalmo-eikonometer findings and prescription:

Distance:

R.E. +6.00 D.sph. ⌯ +1.75 D. cyl. axis 135°

L.E. +7.00 D.sph. ⌯ +2.00 D. cyl. axis 45° ⌯ 1.50% ⌯ 2.00% M. axis 180°

Near:

R.E. +7.50 D.sph. ⌯ +1.75 D. cyl. axis 135°

L.E. +8.50 D.sph. ⌯ +2.00 D. cyl. axis 45° ⌯ 1.00% ⌯ 0.50% M. axis 180°

Figure 3 represents the relative size and shape of the images seen by the right and left eye. The patient did not get the glasses prescribed.

Case 5. Mr. H. C., aged 23 years, complained of occasional headaches; his eyes tired on use. He obtained no relief from glasses.

Examination revealed:

R.E. 0.37 D. cyl. axis 95° = 20/15+
L.E. +2.00 D.sph. = 20/15+

Muscle test: Esophoria at 20′ = 4Δ; exophoria at 13″ = 2Δ.

On account of the marked anisometropia immediate measurement on the ophthalmo-eikonometer was carried out. The result was as follows:

Distance:

R.E. +0.37 D. cyl. axis 95° ⌯ 2.00% over-all (O.A.)

L.E. +2.00 D.sph.

Near:

R.E. +0.37 D. cyl. axis 95° ⌯ 1.50% O.A. ⌯ 1.50% M. axis 180°

L.E. +2.00 D.sph.

The right image was smaller than the left one by 2.00 percent when the eyes were focused at 20′; at near range (40 cm.) the right image was smaller by 1.50 percent horizontally and 3.00 percent in the vertical meridian.

With this refraction it was necessary to increase the image before the right eye by 1.50 percent meridionally axis 180°. It was not possible to get this size correction in a single lens or with a single fit-over and it was therefore suggested that this be made up in a permanent iseikonic prescription form. The prescription itself translated as follows:

The right eye consists of a double lens. The outside lens has on its surface away from the eye a +3.62 D. cyl. on a +9 base, while the inside surface is a —7.50 D.sph., the lens to be 3 mm. thick. The lens next to the eye has on its outside surface a +6.00 D.sph., and its inside surface a —4.25 D. cyl. on a +7.37 D. base, 1 mm. thick.

The left lens was made up in a single lens which was a +2.00 D.sph. on a —4 D. base, 4 mm. thick.

When this prescription is mounted with the eyewires, 12 mm. from the cornea, the magnification of the right eye lens in the .05 meridian is 3.27 percent and in the 95th meridian is 3.63 percent. The magnification of the left eye lens is 5.70 percent. The magnification of the lenses in the ophthalmo-eikonometer gives for the right eye in the .05 meridian 2.57 percent and in the 95th meridian 3.00 percent and for the left eye 5.04 percent. In other words, the magnifications in the permanent eikonic correction are about 0.65 percent more in both eyes than the ophthalmo-eikonometer findings.* Partial relief was the result.

Case 6. Mrs. E. B., aged 44 years, complained of headaches, occipital and up to vertex, having their onset in the middle of the morning and becoming worse during day; usually worse during menses, and especially on reading.

Refraction:

R.E. +0.87 D.sph. ⌯ +0.25 D. cyl. axis 15° = 20/15 add +1.00

L.E. +0.62 D.sph. =20/15 add +1.00

* This is a report sent from Dartmouth.

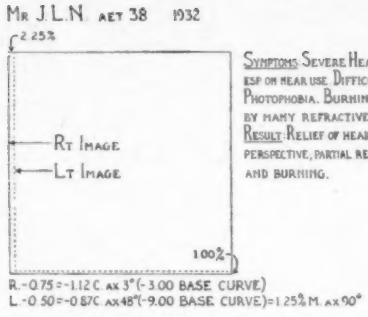
MR J.L.N. AET 38 1932
2.25%
RT IMAGE
LT IMAGE
100%
SYMPTOMS: SEVERE HEADACHES ALL HIS LIFE, ESP ON NEAR USE. DIFFICULTY WITH FOCUSSING. PHOTOPHOBIA. BURNING UNRELIEVED BY MANY REFRACTIVE CORRECTIONS.
RESULT: RELIEF OF HEADACHES; INCREASE IN PERSPECTIVE, PARTIAL RELIEF OF PHOTOPHOBIA AND BURNING.
R.-0.75=-1.12 C. AX 3° (-3.00 BASE CURVE)
L.-0.50=-0.87C. AX 48° (-9.00 BASE CURVE)=1.25% M. AX 90°

Fig. 1. (Hughes)

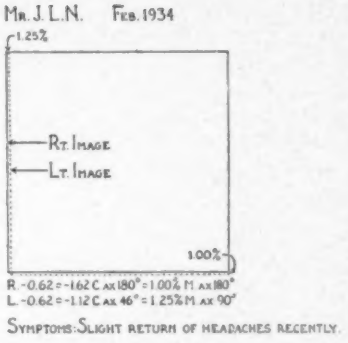

Fig. 1A. (Hughes)

Chart showing relative size of retinal images in case 1.

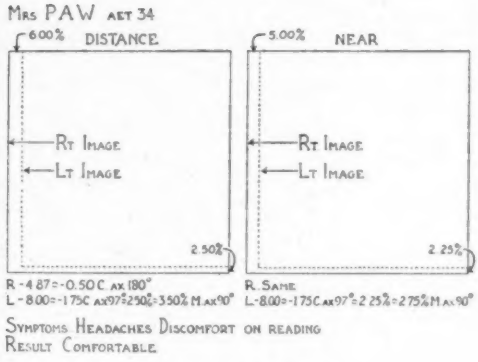

Fig. 2. (Hughes)

Chart showing relative size of retinal images in case 2

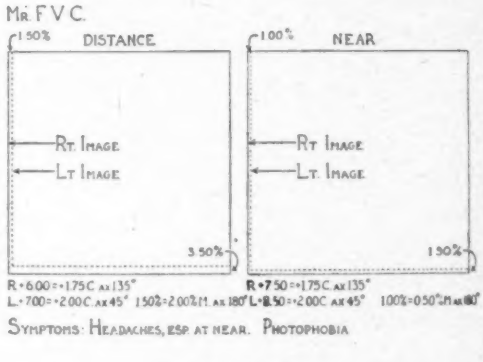

Fig. 3. (Hughes)

Chart showing relative size of retinal images in case 4

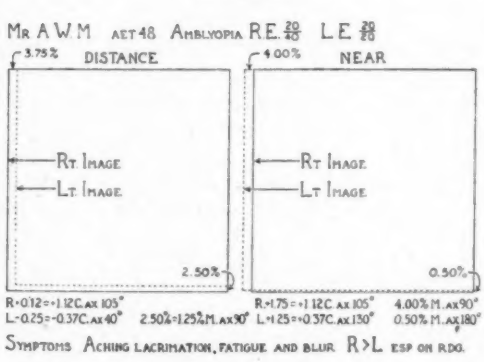
MR A.W.M. AET 48 AMBLYOPIA R.E. 20/60 L.E. 20/20
3.75% DISTANCE
4.00% NEAR
RT IMAGE
LT IMAGE
2.50%
0.50%
R.+0.12=+1.12 C. AX 105°
L.-0.25=-0.37C. AX 40° 2.50%=1.25% M. AX 90°
R.+1.75=+1.12 C. AX 105° 4.00% M. AX 90°
L.+1.25=+0.37C. AX 130° 0.50% M. AX 180°
SYMPTOMS: ACHING LACRIMATION, FATIGUE AND BLUR. R>L. ESP ON RDG.

Fig. 4. (Hughes)

Chart showing relative size of retinal images in case 9

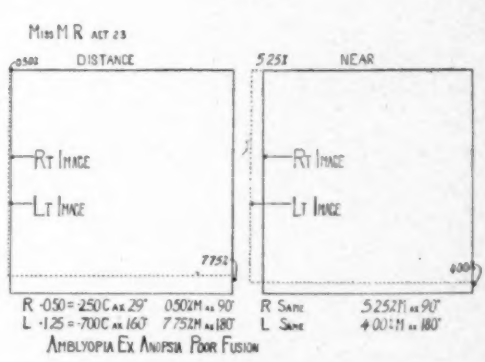

Fig. 5. (Hughes)

Chart showing relative size of images in case 12

Muscle test: Exophoria at 20′ = 0$^{\Delta}$; exophoria at 13″ = 4$^{\Delta}$; right hyperphoria varied from 0$^{\Delta}$ to 0.75$^{\Delta}$.

There was very little difference between this and her previous lenses, so an ophthalmo-eikonometer test was given and showed:

Distance:

R.E. +0.87 D.sph. $\bigcirc$ +0.25 D. cyl. axis 15°

L.E. +0.50 D.sph. ⊂⊃ +0.50 D. cyl. axis 70° ⊂⊃ 1.00% O.A. ⊂⊃ 2.00% M. axis 180°

Near:

R.E. +1.50 D.sph. ⊂⊃ +0.25 D. cyl. axis 15° ⊂⊃ 2.00% M. axis 90°

L.E. +1.75 D.sph. ⊂⊃ +0.50 D. cyl. axis 70° ⊂⊃ 1.50% M. axis 180°

The near correction was made up first, the lenses being:

R.E. +1.50 D.sph. ⊂⊃ +0.25 D. cyl. axis 15° (—1.25 base curve cyl. ant. surface) and 2.00% M. axis 90° (fit-over)

L.E. +1.75 D.sph. ⊂⊃ +0.50 D. cyl. axis 70° (—3.00 base curve cyl. ant. surface) and 1.00% M. axis 180° (fit-over)

These lenses enlarged the image of the right eye 2.00 percent horizontally and the left one by 1.50 percent axis 180°.

The patient obtained relief.

Case 7. Mr. W. F. R., aged 35 years, complained of headaches, their onset one hour after rising in morning, not made worse on reading, and photophobia.

Examination revealed the refraction to be:

R.E. + 0.50 D.sph. ⊂⊃ +0.75 D. cyl. axis 90° = 20/20+ P.P. (accom.) 100 mm.

L.E. —0.75 D.sph. ⊂⊃ +2.50 D. cyl. axis 86° = 20/20+ P.P. (accom.) 100 mm.

Muscle test: Esophoria at 20′ = 1$^{\Delta}$; exophoria at 13″ = 3$^{\Delta}$; no hyperphoria; prism divergence 4$^{\Delta}$; prism convergence 6$^{\Delta}$ to 10$^{\Delta}$.

A prolonged occlusion test revealed no change in the horizontal balance, but a left hyperphoria of 1.00$^{\Delta}$ when the left eye was occluded, and a right hyperphoria of 2.25$^{\Delta}$ when the right eye was occluded. A 1.25$^{\Delta}$ base down in the right lens had no effect on the headaches. An ophthalmo-eikonometer test was decided upon with the following findings:

Distance:

R.E. +0.50 D.sph. ⊂⊃ +0.75 D. cyl. axis 90° ⊂⊃ 1.25% M. axis 90°

L.E. —0.75 D.sph. ⊂⊃ +2.50 D. cyl. axis 86°

This showed the image of the right eye smaller by 1.25 percent in the horizontal meridian for fixation at 20′.

Near:

R.E. +0.50 D.sph. ⊂⊃ +0.75 D. cyl. axis 90° ⊂⊃ 1.50% M. axis 90°

L.E. —0.75 D.sph. ⊂⊃ +2.25 D. cyl. axis 86° ⊂⊃ 1.50% M. axis 180°

The image of the right eye was 1.50 percent smaller in its horizontal meridian and the left image was 1.50 percent smaller in the vertical meridian. The distance correction was given for general wear and was made up as follows:

R.E. +0.50 D.sph. ⊂⊃ +0.75 D. cyl. axis 90° (ground on plano base sph., cyl. ant. surface)

L.E.—0.75 D. sph. ⊂⊃ +2.50 D. cyl. axis 86° (ground on —0.75 base curve)

The patient obtained no relief.

Case 8. Miss J. A., aged 55 years, was referred on account of discomfort on use of the eyes. She had had many examinations in the past three to four years. The previous prescriptions were identical to within 0.25 D. sphere or cylinder. She was wearing:

R.E. + 1.50 D.sph. = 20/20+

L.E. +1.25 D.sph. ⊂⊃ +0.25 D. cyl. axis 90° = 20/15

Muscle test: Exophoria at 20′ =1$^{\Delta}$; exophoria at 16″ = 3$^{\Delta}$; no hyperphoria.

Ophthalmo - eikonometer check-up showed the image of the right eye to be 0.50 percent smaller in the horizontal meridian. The image seen by the right eye was 0.50 percent smaller horizontally than the left for distance, while for near it was 1.00 percent smaller vertically and 1.50 percent smaller horizontally.

Distance:

R.E. +1.50 D.sph. ⊂⊃ 0.50% M. axis 90°

L.E. +1.25 ⊂⊃ +0.25 D.cyl. axis 90°

Near:

R.E. +3.25 D.sph. ⊂⊃ 1.00% O.A. ⊂⊃ 0.50% M.axis 90°

L.E. +3.25 D.sph. ⊂⊃ +0.25 D.cyl. axis 90°

The prescription for near was made up as follows:

R.E. +3.25 D.sph. (lens ground on plano base) and 1.50% Over-all (fit-over lens)

L.E. +3.25 D.sph. ⌯ +0.25 D. cyl. axis 90° (lens ground on plano base) and 0.50% M. axis 180° (fit-over lens)

The patient obtained no relief.

Case 9. Mr. A. W. M., aged 45 years, complained of headaches, tearing, fatigue, and blurring of the vision of the right eye; also occasional dizziness. Vision without glasses was: R.E. 20/30; L.E. 20/15.

The patient was wearing:

R.E. —0.37 D.sph. ⌯ 3.50 D.cyl. axis 105° = 20/50

L.E. Plano = 20/15

Muscle test: Exophoria at 20′ = 1^{Δ}–2^{Δ}; exophoria at 16″ = 6^{Δ}–7^{Δ}; left hyperphoria = 0.25^{Δ}–0.50^{Δ}.

This man was referred to determine if lenses could be given so that he could use both eyes together. The findings on the ophthalmo-eikonometer revealed:

Distance:

R.E. +0.12 D.sph. ⌯ +1.12 D. cyl. axis 105°

L.E. —0.25 D.sph. ⌯ —0.37 D. cyl. axis 40° ⌯ 2.50% ⌯ 1.25% M. axis 90°

Near:

R.E. +1.75 D.sph. ⌯ +1.12 D. cyl. axis 105° ⌯ 4.00% M. axis 90°

L.E. +1.37 D.sph. ⌯ +0.37 D. cyl. axis 130° ⌯ 0.50% M. axis 180°

For distance the left image was 2.50 percent smaller in the vertical meridian and 3.75 percent smaller in the horizontal meridian. For near the right image was 4.00 percent smaller in the horizontal meridian and the left 0.50 percent smaller than the right in the vertical meridian (see fig. 4). The correction for near was made up in the following manner:

R.E. +1.75 D.sph. ⌯ +1.12 D. cyl. axis 105° (ground on —5.75 base curve 2.7 mm. thick) and 4.00% M. axis 90° (fit-over)

L.E. +1.25 D.sph. ⌯ +0.37 D. cyl. axis 130° (ground on —6.25 base curve 2.2 mm. thick) and 0.50% M. axis 180° (fit-over)

A recent check-up shows the size of the images equalized by these lenses and the patient very comfortable.

Case 10. Mrs. R. H. D., complained of headaches, especially after movies or on reading; photophobia. Many glasses had been prescribed with no change in symptoms.

Refraction:

R.E. no lens accepted = 20/13.6

L.E. +0.25 D.sph. ⌯ —0.12 D. cyl. axis 75° = 20/15

Muscle test: Exophoria at 20′ = 0; exophoria at 13″ = 2^{Δ}.

Ophthalmo - eikonometer correction for equalization of accommodation and size revealed:

Distance:

R.E. +0.25 D.sph.

L.E. —0.25 D.sph. ⌯ 1.50% overall

Near:

R.E. +0.25 D.sph.

L.E. —0.25 D.sph. ⌯ 0.75% overall

The image of the left eye was 1.50 percent smaller in all directions, while the eyes were adjusted for distance and 0.75 percent smaller in all directions for near. The latter was prescribed and made up as follows:

R.E. +0.25 D.sph. (lens ground on a plano base curve)

L.E. —0.25 D.sph. (lens ground on —6.00 base curve)

The patient obtained relief.

Case 11. Mr. C. M. B., aged 29 years, complained that the eyes were uncomfortable, especially on reading and slightly so at movies. He had headaches, starting in the temples and proceeding through to the back of the head.

Refraction:

R.E. +0.50 D.sph. ⌯ +0.50 D.cyl. axis 75°

L.E. +1.25 D.cyl. axis 92°

Muscle test: Exophoria at 20′ = 0$^{\Delta}$; exophoria at 13″ = 3$^{\Delta}$; no hyperphoria.

The patient's physician expressed the desire to have him checked up on the ophthalmo-eikonometer. He was accordingly examined, with the following findings:

Distance:
R.E. +0.50 D.cyl. axis 90° ⌯ 1.50% M. axis 90°
L.E. —0.37 D.sph. ⌯ +1.25 D.cyl. axis 100°
Near:
R.E. —0.25 D.sph. ⌯ +0.50 D.cyl. axis 90° ⌯ 1.50% O.A. ⌯ 1.50% M. axis 90°
L.E. —0.37 D.sph. ⌯ +1.25 D.cyl. axis 100°

The right image at 20′ was 1.50 percent smaller in the horizontal meridian and at near it was 1.50 percent smaller in the vertical and 3.00 percent smaller in the horizontal meridian. The correction to equalize accommodative effort and image size for general wear was made up as follows:

R.E. +0.50 D.cyl. axis 90° (ground on —3.00 base curve)
L.E. —0.37 D. sph. ⌯ +1.25 D.cyl. axis 100° (ground on —0.37 base curve) ⌯ 0.50% M. ax. 180° (fit-over)

Case 12. Miss Mary R. complained of aching about the eyes, worse towards the evening. Vision was R.E. 20/100; L.E. 20/200.

Refraction:
R.E. —0.50 D.sph. ⌯ —2.00 D.cyl. axis. 29° = 20/30+
L.E. +0.75 D.sph. ⌯ —7.00 D.cyl. axis 160° = 20/50+

On account of the great amount of astigmatism and moderate amblyopia, measurement of the size and shape of the visual images was decided on and revealed that for distance the left image was 7.75 percent smaller vertically than the right and that the right one was smaller by 0.50 percent horizontally than the left; and for near the right image was 5.25 percent smaller horizontally and the left one 4.00 percent smaller vertically (see fig. 5). This was represented by the following:

Distance:
R.E. —0.50 D.sph. ⌯ —2.50 D.cyl. axis 29° ⌯ 0.50% M. axis 90°
L.E. +1.25 D.sph. ⌯ —7.00 D.cyl. axis 160° ⌯ 7.75% M. axis 180°
Near:
R.E. —0.50 D.sph. ⌯ —2.50 D.cyl. axis 29° ⌯ 5.25% M. axis 90°
L.E. +1.25 D.sph. ⌯ —7.00 D.cyl. axis 160° ⌯ 4.00% M. axis 180°

Glasses were not prescribed.

Discussion

1. A method has been devised for measuring the relative size of the two visual images and simultaneously estimating the refractive error and the plane of focus for each eye while the eyes are adjusted for vision at 20′, and also at 16″.

2. A practical method has been devised for altering the size and shape of the visual image by changing the curvature, thickness, and arrangement of the lenses placed before the eyes. The variations are made so the size and shape of the image, as interpreted by one eye, correspond with the size and shape of the image in the other. The final lenses do not differ greatly in gross appearance from those ordinarily worn.

3. Asymmetry of the visual images (aniseikonia) has been demonstrated to be much more common than has been generally assumed. About thirty percent of the persons who wear glasses have a measurable amount of aniseikonia. The main symptoms from this asymmetry are:

Headaches and eye aches
Photophobia
Train and car sickness
Movie fatigue
Indifference to or dislike of reading
Inability to read for long
Dizziness
Various gastro-intestinal symptoms
Continuance of eye discomfort despite accurate correction of refractive and muscle errors.

These symptoms may or may not be associated with other local ocular disturbances.

4. Equalization of the size and shape of the visual images brings relief of the annoying symptoms dependent on their asymmetry in a large proportion (about 80 percent) of cases.

5. In three cases defective fusion with amblyopia ex anopsia (one with convergent strabismus) and a great inequality in the size and shape of the visual images were demonstrated. It has been repeatedly found that the aniseikonia is usually so great as to preclude fusion, in the cases of strabismus measured up to the present by the staff at Dartmouth. This offers a new and reasonable concept as to the difficulty of obtaining fusion in many squint cases after operative procedures, and suggests a probable etiological factor.

Full credit is due Professor Ames and his staff in the Department of Physiological Research at Dartmouth Medical School for (1) the development of this technic of measuring the asymmetries in the size and shape of the visual images, and (2) the method of relieving the symptoms of patients suffering from this distressing condition.

This report will be followed by a further paper detailing the results obtained in a larger series of cases. Free reference has been made to statements, personal and published, of various members of the staff of the Department for Research in Physiological Optics of Dartmouth College.

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THE COMMON DISORDERS OF THE SKIN OF THE EYELIDS

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This is a recapitulation of conditions affecting the skin of the eyelids and does not lend itself to review. From the Pittsburgh Skin and Cancer Foundation. Read before the Pittsburgh Ophthalmological Society, November 26, 1934.

Inflammatory processes and new growths furnish the greater number of skin disorders of the eyelids.

Inflammations

Inflammatory processes in this location, as elsewhere on the body, may be acute or chronic; they may be limited to the skin surface covering the lids, or they may only be part of a more generalized inflammatory process of the rest of the integument, especially that of the face and scalp. Of the latter, only those having their inception on the lids are of concern in our discussion.

The appearance of dermatitis of the eyelids depends much on the severity and the age of the process. At its inception the symptoms are usually mild; one notices a somewhat elongated, slightly edematous, pale reddish patch or patches, with fine, branlike desquamation; as the process progresses, increased pigmentation occurs, and the normal lines of the epidermis become more and more pronounced, until an actual thickening takes place.

If the irritant had been severe, fine vesicles can be discerned and the whole process takes on more severe qualities of swelling and redness. As a result of secondary infection, principally brought about by rubbing and scratching, crust formation is added to this clinical picture.

Burning and itching are predominant symptoms and are frequently out of proportion to the objective signs. Pain depends on the amount of swelling and redness present.

External irritants play the most important rôle as etiological agents. Their action may be founded either on the fact that they are capable of producing a chemical irritation, or on an individual sensitivity of the patient. In either instance, they are examples of a contact dermatitis, with this virtual difference, that the chemical dermatitis can occur in everyone, while dermatitis based on an allergic reaction can occur only in sensitive individuals. In some instances, of course, both factors play a part, in which case the dermatitis usually is exceedingly intense.

The following external irritants have been found capable of provoking contact dermatitis. They are named in the order most frequently observed: cosmetics, plants, drugs, pyogenic infection of the follicles, metals of rims of spectacles, and eyeglass-cleansing fluids.

Cosmetics. The various shadow-producing, lash-and-brow-coloring agents used directly on the lids receive our first consideration, not because of the frequency with which they cause a dermatitis, with the exception of a preparation called Lash-Lure, but rather in spite of it. Instances of mascara dermatitis do occur but they are rare.

Much more frequent is the lid dermatitis caused by cosmetics that are used on the face and scalp.

Hair dyes, hair tonics, and curling solutions or fixatives are frequent trouble-makers. The manner in which they come in contact with the eyelids is usually through the medium of pillowcases. The thinnest and most sensitive part of the facial skin is on the lids and there the first evidence of a dermatitis occurs. The subjective symptoms are burning and itching. They are especially marked during the night and in the morning, the reason for this being evident—the time of contact. Excitants in this group, with the exception of the curling solutions, belong to the chemical group of irritants.

Of the cosmetics used on the face, the so-called creams are the principal offenders. It is usually difficult to convince the patient and also the physician of this. Since creams are usually

massaged into the skin of the whole face and neck, the expectation naturally follows that if they cause a dermatitis it should involve the entire massaged area. A great number of examples of dermatitis limited to the eyelids convinced us to the contrary, however. It is only after persistent use of the cream, sometimes only after a considerable period, that the rest of the contacted integument becomes involved in the dermatitis.

Powder, rouge, cleansing fluids, balms, astringents, and perfumes may all be irritants, inducing a dermatitis on the basis of a personal (allergic) sensitivity. We are not yet ready to make an unqualified statement as to the exact substances in cosmetics which give rise to this phenomenon of allergy, but we are certain that, in addition to orris root, perfume or the substances used to scent cosmetics are frequently the actual etiologic agents.

Although new and untried cosmetics whose use coincides with the time of the eruption must always be suspected, one should not be misled into thinking that cosmetics which have been used by the patient for longer periods are and remain harmless. Two reasons militate against such a dictum:

1. Through frequent use of a cosmetic a sensitivity may develop as it does, for example, in the case of primrose.

2. Ingredients of cosmetics are frequently changed by the manufacturers to conform to the variations in the modes and styles which affect scent as well as form and shape.

Nor is it necessary that the person affected be the user of the cosmetic—it may be transferred to the patient during close contacts—the husband in the case of the wife or vice versa must be thought of as possible sources, while highly sensitive individuals will show evidence of such a dermatitis if they happen to be in a room where persons wearing cosmetics are present.

Plants. Individual susceptibility on the basis of allergic reaction plays the important rôle in dermatitis of the eyelids as far as plants are concerned. House plants, especially those with waxy leaves, are capable of producing contact dermatitis. English ivy, or any climbing plant kept in baskets and pots throughout the home, begonia, wax plants, primrose, cyclamen, geranium, and poinsettia are plants of which we have personal knowledge in the production of this inflammatory process.

It is a good plan to remove all indoor vegetation from the homes of patients with any type of dermatitis. It is now fairly accurately established that the actual offending substance is a vegetable oil which finds its way directly or indirectly onto the skin.

We should like to mention a case very much to the point: A patient of one of the members of this society had a progressive cataract requiring an operation, but on account of a mild inflammation about the lids and conjunctivae, the operation had to be constantly postponed. By careful questioning a diagnosis of dermatitis due to plant sensitivity was established. The patient was placed in an air-conditioned room and the inflammatory process, which was of a year's standing, disappeared promptly. The operation was performed and was followed by an uneventful recovery.

Drugs. Either ingestion of, or contact with, certain drugs may precipitate a dermatitis. Nasal sprays and eye lotions containing volatile oils, ephedrine, novocaine, atropine, dionine, and butyn, and ointments containing mercury may give rise to it.

The ingestion of luminol in a 72-year-old man caused an acute dermatitis which started with an intense swelling and redness at the eyelids and rapidly involved the face, ear, and neck. Under autohemotherapy and liquor aluminum acetate, 1:30 application, the eruption subsided in 10 days. As it was important to be certain of the contention that this was a phenobarbital dermatitis, the patient was instructed to take three one-half grain doses in twenty-four hours. The dermatitis recurred exactly in the manner of its first appearance.

Pyogenic infections. Many explanations for the frequency and causes of pyogenic folliculitis of the eyelids have

been promulgated. We have no intention of adding to the various concepts, many-sided theories, and probable explanations dealing with the question why one limited region of a body shows such an inaptitude in combating streptococci or staphylococci. We want to register this observation, however, that frequently a dermatitis of the eyelids accompanies such a pyogenic folliculitis. This is similar to one which, on other parts of the body, we dermatologists term an infectious eczematoid dermatitis. In our estimation, this is but another term for an eczema or dermatitis produced as an allergic reaction to the ordinary pus-producing organisms. Further, the best therapeutic results have been obtained by us with desensitization, using autogenous vaccines for this purpose. Both of these strengthen our conviction that in a certain number of instances, at least, the cause of pyogenic folliculitis rests on bacterial allergy.

Spectacle dermatitis. Nickel and gold produce a dermatitis at times—this has been described frequently. This so-called metal dermatitis is characterized by the configuration which it assumes, simulating the outline of the rim of glasses.

We have also observed dermatitis of the eyelids caused by cleansing solutions used on the lenses—one case in particular is worth recording: It deals with a patient who developed a periodically recurrent eyelid dermatitis. Questioning brought out the fact that about the middle of the week the dermatitis was worse, and that at the beginning of the week the inflammation would almost disappear. Once this was established, it was not difficult to ascertain the fact that on his weekly trip to the barber shop on Tuesdays, the solicitous barber cleansed the patient's eyeglasses with Pinaud's Lilac Vegetal. Discontinuation of this stopped the dermatitis.

Many other etiological agents exist and have been described, but as this presentation includes only those of which we have personal knowledge, we shall refrain from mentioning them.

In view of what has been so sketchily said, it is easy to discern that the most important procedure, when one is confronted with an eyelid dermatitis, is the taking of a careful and detailed history. This is not so easy and can only be done if one becomes familiar with the habits of the patient. It is a good plan, accordingly, to ask the patient to recite the activities of a typical day. Prompting at certain points is needed, however, for it is surprising how unobserving and forgetful most of us are. We may sit in front of an English ivy plant for weeks, and will note its absence rather than its presence. A woman may state quite sincerely that she uses no cosmetics on her hair until one asks her about hair rinses or hair fixatives used after shampoos. Also the habits of the husband must be learned, as occasionally the chemical dermatitis of the wife's eyelids finds its source on his pillowcase.

The treatment is simple. It consists of the elimination of all of the previously mentioned possible sources of irritation; further, a thorough shampoo and covering of the head with a bandana at night—for fear that all the chemicals have not been removed from the head —a change of the pillowcases, a simple calamine lotion containing a small amount of olive oil. In seven days this contact dermatitis should and does disappear, after which one must permit the gradual resumption of the patient's regular habits. The use of one additional cosmetic is permitted every fourth day, and then one watches carefully for a recurrence. In this manner one can usually spot the offending specific agent easily.

The question of skin testing when the subject of allergy is under discussion is always pertinent. The only type of skin test that is of value in these cases is the so-called patch or contact test. This should always be tried, but, as frequently happens, we are dealing with a localized sensitivity in these patients and a negative test on any other than the affected portion means nothing at all, while the direct application of the suspected agent to the lid may cause too much discomfort.

Seborrhoic dermatitis. Occasionally a dermatitis appears which usually be-

Fig. 1 (Hollander and Baer). Lymphatic leukemia. Note infiltration of upper left eyelid.

Fig. 2 (Hollander and Baer). Dermatitis medicamentosa (luminal).

Fig. 3 (Hollander and Baer). Syphilis—nodulo-ulcerative tertiary.

Fig. 4 (Hollander and Baer). Lupus erythematosus of eyelid.

Fig. 5 (Hollander and Baer). Nevus pigmentosus.

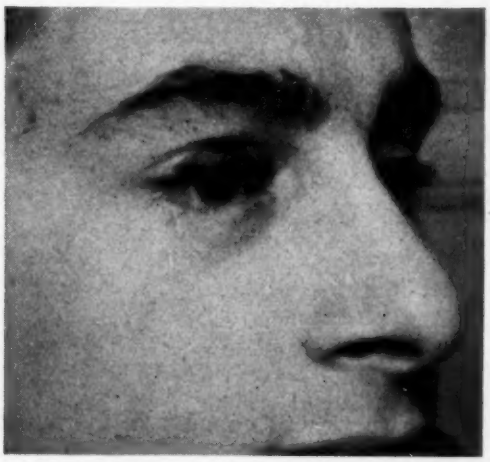

Fig. 6 (Hollander and Baer). Nevus pigmentosus, after removal from lower eyelid.

gins somewhere in the brow and spreads from there to, and involving, the upper eyelid. The onset is insidious and may show nothing but a little scaling. As this becomes more pronounced a sharply marginated patch is formed which is somewhat yellowish in the center and appears reddened at the periphery. The scales covering it are usually granular. A patch like this may persist for months before the other eyelid is affected. Frequently the spread to the other eyelid does not affect the other eyebrow. The condition is very pruriginous.

Seborrhoic dermatitis is a frequent affliction of the scalp, but it may exist independently on the brows and the upper eyelids. In this latter instance the diagnosis is more difficult.

The treatment consists of the application of a very mild sulphur ointment, starting at one-half to one percent in vaseline. At the sign of the slightest irritation, this application should be discontinued. If the condition seems recalcitrant to this treatment, one-quarter unit doses of X-ray are of great value. These should be given once a week for a period of four to six weeks. There are usually no sequelae to this condition.

Neurodermatitis. Occasionally a chronic inflammatory process occurs on the lids, composed of a thickened epidermis within which a few superficial papules can be discerned. The linear demarcations of the epidermis become pronounced and the lesions may feel leathery to the touch. Itching is a pronounced symptom but has no regularity of occurrence. This condition may occur independently on the lids, but at times it is associated with similar lesions on the neck or patches about the elbow. Except for the fact that they are neurogenic in origin, the etiology is not clear. Fatigue, nerve exhaustion, and worry seem to affect this condition adversely. Unless a neurodermite is treated it may persist indefinitely with little apparent tendency to spread. This means that once a certain number of areas on the lid are affected, the condition may persist, but it remains stationary.

The treatment consists of X-ray in one-quarter unit doses weekly until the condition disappears, which usually takes from four to eight weeks.

A neurodermite is notorious for its recurrence and one has to be guarded in the application of X-ray, because if this is overdone, a radio dermatitis may result. In addition to the local treatment, a general tonic treatment is of considerable value.

Chronic inflammatory disturbances

These belong principally to the specific group of chronic granulomatous processes, syphilis and tuberculosis.

Syphilis. Lesions belonging to all stages of syphilis have been observed by us. In two instances, chancre of the lid was present. In one case no history could be obtained of the manner of inoculation. The patient was an eight-year-old colored child presenting a deep large, single, ulcerative lesion of the Hunterian chancre type on the right upper eyelid. Little difficulty was experienced in proving by dark-field examination the presence of the Treponema pallidum.

In a second instance the chancre occurred on the palpebral conjunctiva. The patient was a 43-year-old man who had had a foreign body licked out of his eye. The Russian barber must have had secondary mucous patches and the Treponema pallidum was deposited in the scratched conjunctiva. Twenty days later a rapidly developing, sloughing mass appeared which, after considerable difficulty, was positively identified as a hard chancre.

Only in patients on whom secondary lesions are very numerous and profusely marked, have we observed involvement of the eyelid.

Among the tertiary syphilitic lesions both the nodulo-ulcerative and the single gummatous types of lesions occur in this location. One must always think of the possibility of carcinoma or tuberculosis in the differential diagnosis, especially is this true of the former in cases when the site of the nodulo-ulcerative tertiary syphilis is at the muco-cutaneous junction of the lid; if the serology is negative, there are but few guiding points. These entail, first,

the absence of hardness, although the induration of a tertiary syphilitic lesion resembles that tactile quality, and second, the presence of healed and healthy scars. Neither carcinoma nor tuberculosis is capable of producing these. Scars of tertiary syphilis are usually found within the active lesion. They are usually multiple and have a crescentic configuration. Needless to say that as the entire lesion is usually not very large, one has to be extremely careful in the examination of it and the interpretation of one's findings. At times nothing short of a biopsy will clear up the diagnosis.

Tuberculosis. In two instances, quite unexpectedly, tumefactions which involved the lower lid at the muco-cutaneous margin and gave all the characteristics of a carcinoma, with the possible exception of extreme hardness, proved on section to be tuberculosis. In each instance the lesion was removed under the false diagnosis of carcinoma, and healed completely. There was nothing to arouse our suspicion—so that clinical photographs were not taken. The lesions were small, rounded tumors having a peculiar dark reddish color. Both occurred in women, one 60 years old, the other 74.

Carcinoma

We have studied 58 cases of carcinoma of the eyelid.

Histologically they may be classified in three groups—the basal or hair-matrix type, the mixed, and the squamous or prickle-celled type. Their recognition is important from the standpoint of prognosis, as the two last-named types are notorious in their recurrence and metastatic formation.

Therapeutically the important lesson learned, in addition to the above, is the consideration given to

1. The location of the lesion,
2. The absence or presence of conjunctival involvement.

The eradication of basal-cell type of carcinoma, when it does not involve the mucocutaneous junction, is a simple therapeutic problem. The ease of accessibility and the response to radical treatment make these lesions very amenable to treatment.

The problem, however, becomes entirely different when the carcinomatous involvement goes beyond the loose alveolar tissue, or when the tumor extends into the conjunctiva. Usually it is a mixed-cell or squamous-cell type of carcinoma that causes this kind of encroachment. Unhappily all of us are familiar with eyelid carcinoma which progresses in spite of any and all treatment. We have seen these following radium, X-ray, or operative procedures; we have seen them when the first treatment was given by us or by some other therapist, so that we must conclude that there are some examples of carcinoma which, from their inception, carry death as the only relief from the suffering and misery they produce.

The chief clinical characteristics of carcinoma of the eyelid are the following: tumefaction, hardness, neoplastic border, and telangiectasia. Necrosis in the form of ulceration occurs in all types after a shorter or longer period of time. The base of these ulcers, which are usually covered by easily removable encrustation, is usually studded with neoplastic nodules.

Location of the lesion and extent of involvement determine the type of therapy to be employed. Lesions at the inner canthus are best treated by electrocoagulation. This can be well done after novocaine infiltration, and the resultant scars are not unsightly. On all other locations, the lesions, if freely movable, are best removed by radio-knife excision. Dependent on the loss of tissue, partial or complete deep pedicle grafts are used to replace the area thus removed. Lesions which are deeply infiltrating respond well to massive doses of X-ray. After shielding the unaffected areas with lead, 6000 r or 17 E.D. are administered. The total dose is applied in two or three treatments which cover a period of one week. This treatment is followed by a marked inflammatory reaction and a good deal of pain. At its height, about 10 days after the completion of the total dose, the lesion appears very red and angry, and there is marked encrustation present.

Later, usually within four weeks, these symptoms subside and gradually the involved area becomes replaced by an atrophic flat surface. Signs of the X-ray burn thus produced will appear within two years. As this procedure is carried out only in the inoperable type of cases, one is justified in using this method.

Miscellaneous Diseases

Xanthoma palpebrarum. All of us are, of course, familiar with the single or multiple, elongated or oval, yellowish nodular deposits of soft consistency, usually seen near the inner canthi during and past middle life. If left alone they usually progress to a size where they may become unsightly. They are the product of cholesterol deposit, either as a result of some disturbance in the lipoid metabolism or some unknown degenerative process. Although many types of treatment have been recommended for this condition, such as tri-chloracetic acid used with water neutralization, carbon - dioxide - snow freezing, electrodesiccation, and others, our choice is excision, care being taken to remove even the slightest particle. After excision, fine dermal sutures are used to pull the gaping wound together; these sutures should not be kept in longer than 48 hours. The resultant scars are excellent.

Molluscum contagiosum. This condition is made up of a number of discrete lesions which are rounded projections of various size, with a central umbilication where the yellowish, crystalline body can be discerned. This is the molluscum body. It must be removed in order to eradicate this condition. The procedure is simple; unless a great number of lesions exist, no local anesthetic is necessary. The molluscum bodies may be picked out with a Von Graafe knife, making certain that some bleeding occurs and that a small hematoma replaces the removed molluscum body. Some advocate the use of a tincture-of-iodine swab in the cavity left, but we find this unnecessary.

Chronic edema of the eyelids. This localized form of lymphstasis is occasionally observed. The process usually causes no subjective symptoms, but it is unsightly, especially since it is progressive. In a carefully studied case we were unable to find any foci of infection, injury, or any systemic condition responsible. One must differentiate it from Quincke's edema, which, of course, is usually associated with burning and itching and is evanescent in character, and also from emphysema. In this latter, creptitation is present, and unless it is microbic in origin, one always gets the history of some marked oral exertion.

Nevi. Several types of birthmarks may make their appearance on the eyelids. Of these the cavernous type of hemangioma is the most frequent. A multiplicity of therapeutic agents have been used to eradicate these raised, bluish-red tumors of soft consistency. We think that the best cosmetic results are obtained from the use of carbon-dioxide freezing under medium pressure for 25 to 30 seconds; covering the entire tumor has given us the best results. This treatment may have to be repeated three or four times, four to five weeks apart. We discourage the use of radium because although the immediate results are good, later on there may occur unsightly atrophic and telangiectasia-covered areas over the location where radium had been applied.

Nevus flammeus or port-wine stains should be let alone, as the results in this very superficial capillary hemangioma are invariably bad. There is a preparation called Covermark which can be used to good advantage as a cosmetic.

Nevus pigmentosus. Examples of this type of birthmark are not infrequent. Surgical excision is the best therapeutic approach, unless the nevus is very small, when electrocoagulation suffices.

Verruca. Three types of this neoplastic lesion appear, the ordinary verruca vulgaris, verruca plana juvenilis, and the filiform verruca. The first responds to electrodesiccation under novocaine, the second to protiodide of mercury by mouth, while the filiform wart should be cut off with a pair of scissors and the base cauterized by a desiccating electrical current.

Dermatolysis palpebrarum — Bleph-

arochalasis[1]. Loose wrinkling with atrophic folds of the skin is not an unusual condition. To obliterate them molten wax or paraffin have been used by cosmeticians. After a certain time elapses, the paraffin will become lumpy and unsightly. "Foreign-body tumors" will develop which are exceedingly hard to remove, as these paraffinomas become traversed with fibrous-tissue trabeculae.

Recently we have seen another wrinkle-removing procedure practiced by an advertising concern, the American Institute for Facial Rejuvenation. They paint some escharotic agent over the lids. Needless to say that the wrinkles were removed, but the resultant scarring was much more disfiguring than the wrinkles had been.

Tularemia. Less than 1 percent of all the cases of rabbit fever are of the oculoglandular type. Lacrimation, swelling of the lids and surrounding structures, and edema of the ocular conjunctiva accompany the papule or the primary lesion, which is usually situated on the conjunctiva of the lower lid. Later, ulceration occurs at this site and the regional lymph glands become enlarged.

The diagnosis entails the following:

1. Tularemia consciousness.
2. The history of working with rabbits or being bitten by a tick.
3. A primary conjunctivitis followed by ulcers of the conjunctiva.
4. Persistent enlargement of the regional lymph glands.
5. Fever persisting two or three weeks.

Skin and serum agglutination tests will verify suspicion. The treatment consists in the application of one-quarter unit of X-ray to the primary lesion and the early use of a serum prepared by Foshay.

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THE PUPILLARY LIGHT REFLEX AFTER LESIONS OF THE POSTERIOR COMMISSURE IN THE CAT*

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Since a number of observations in the literature have suggested a relationship of the pupillary light reflex to the posterior commissure, the effect upon the light reflex of lesions in this commissure has been studied in the cat, the lesions being produced with the aid of the Horsley-Clarke instrument.

Following destruction of the posterior commissure in the midline, the light reactions of the cat are reduced but not abolished, indicating a partial but not a complete central decussation of the light-reflex pathway in the posterior commissure of this animal.

After such lesions, no evidence for the localization of the light-reflex impairment in either the nasal or the temporal half of the retina could be obtained.

The unilateral Argyll Robertson or fixed pupil is usually explained as being due to a unilateral lesion which interrupts the afferent light-reflex pathway somewhere between its central decussation and the oculomotor nucleus. The site of this decussation has been a debated question in the literature on the light-reflex pathway. In the past few years, however, a number of observations have revived the original contention of Darkschewitsch[1] that the central decussation in the light-reflex pathway takes place in the posterior commissure.

In order to recall its relationships, it may be stated that the posterior commissure is situated in the pretectal region intermediate between the thalamus and the superior colliculi of the corpora quadrigemina. It lies over the transition from the third ventricle to the cerebral aqueduct (fig. 1) and should not be confused with the commissure of the superior colliculus, lying immediately caudad.

Lenz[2] in silver-stained human brain material traced an optic fascicle, which he considered the light-reflex pathway, into the pretectal region and thence to the oculomotor nucleus, and observed that a part of this fascicle crossed in the posterior commissure. Collier[3] in an examination of the autopsy material of a patient who had exhibited a loss of the light reflex, found a hemorrhagic softening which destroyed the posterior commissure on one side of the brain. Herrmann[4] in an examination of the autopsy material in a case of multiple sclerosis which had shown a loss of the light reflex, observed a plaque which destroyed the posterior commissure, but which did not extend beyond it.

While the two latter observations would seem to indicate a complete decussation of the light-reflex pathway in the posterior commissure of man, this has not been found to be the case in experimental animals. Karplus and Kreidl[5] obtained a bilateral pupillo-constriction from unilateral stimulation of the afferent light-reflex pathway in the brachium of the superior colliculus, after section of the posterior commissure in the cat. Recently, after destruction of the posterior commissure in the cat, Spiegel[6] observed a reduction but not an abolition of the light reflex.

In a series of experiments devoted to tracing the central path of the light reflex by electrical stimulation (Ranson and Magoun[7]), evidence was obtained which pointed to a partial crossing of the light-reflex pathway in the posterior commissure of the cat. In order to investigate this relationship in more detail, the effect upon the light reflex of lesions in the posterior commissure has been studied in the cat, and the results of this study form the subject of the present report. These results, which confirm and extend the observations of

* This study was aided by a grant from the Rockefeller Foundation for research in neuroanatomy. From the Institute of Neurology and the Department of Ophthalmology, Northwestern University Medical School. Read before the Chicago Ophthalmological Society, March 18, 1935.

Spiegel, demonstrate a partial but not a complete crossing of the light-reflex pathway in the posterior commissure.

Methods

Lesions in the posterior commissure were produced under aseptic precautions with the aid of the Horsley-Clarke stereotaxic instrument, the detailed use of which has been reported elsewhere (Ranson[8]). The instrument may be briefly described as an apparatus, adjustable to the animal's head, which enables a needlelike electrode, insulated except at the tip, to be accurately oriented within the interior of the brain by readings along the scales of the instrument. After the electrode is inserted into the brain, the tissue surrounding the exposed tip of the electrode is destroyed by electrolysis.

In this way, midline lesions of the posterior commissure were produced in five cats, and unilateral lesions of the commissural fibers, as they swung ventrally around the central grey of the aqueduct, were produced in two cats. In making a midline lesion in the posterior commissure, a small opening was made in the calvarium, the superior sagittal sinus was pulled slightly to one side, and the electrode was inserted

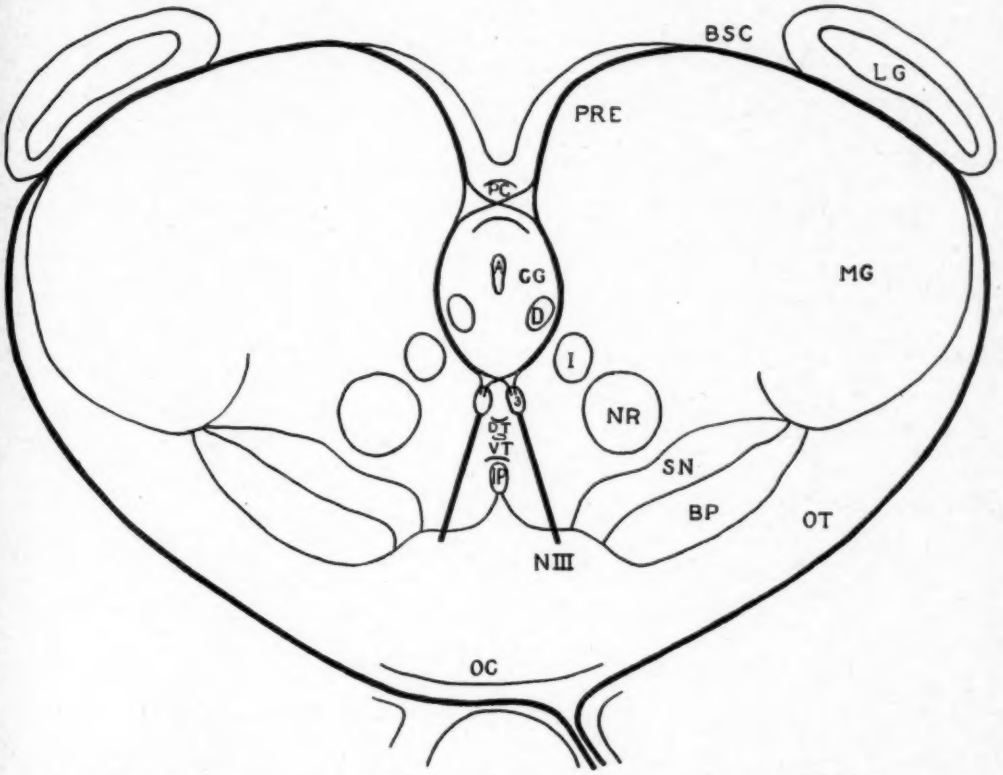

Fig. 1 (Magoun, Ranson, and Mayer). Diagram of the path for the pupillary light reflex. The locations of synapses are not indicated. Impulses from the retina reach the pretectal region (PRE) by way of the optic tract (OT) and brachium of the superior colliculus (BSC). From this region the fibers carrying the pupillo-constrictor impulses arch ventrally around the central grey (CG) at the level of transition between the third ventricle and cerebral aqueduct (A). There is evidence for a partial crossing of the light-reflex pathway in the posterior commissure (PC) and for another partial crossing ventral to the central grey. Other structures are designated as follows: BP, basis pedunculi; D, nucleus of Darkschewitsch; DT, dorsal tegmental decussation; I, interstitial nucleus; IP, interpeduncular nucleus; LG, lateral geniculate body; MG, medial geniculate body; NR, red nucleus; NIII, oculomotor nerve; OC, optic chiasma; SN, substantia nigra; VT, ventral tegmental decussation; 3, oculomotor nucleus.

in the midline, 5 mm. rostral to the zero transverse plane of the instrument. The electrode was halted 2½ mm. dorsal to the zero horizontal plane, and a direct current of 7 milliamperes was applied for 30 seconds. The electrode was then placed at the same dorsoventral levels as in the first puncture.

In making a unilateral lesion of the commissural fibers lateral to the central grey, the electrode was inserted into the brain 1 mm. to the left of the midline

Table 1

DATA ON PUPILLARY REACTIONS OF CAT 72 FOLLOWING OPERATION.
All measurements in mm.

Post-Operative Interval	Before Lighting		Lighting Right Eye		Lighting Left Eye	
	Width Right Pupil	Width Left Pupil	Width Right Pupil	Width Left Pupil	Width Left Pupil	Width Right Pupil
1 day	6.5	6	3	3	3.5	3
5 days	10	10	6.5	6	6	6
22 days	11	11	6	5	5	6

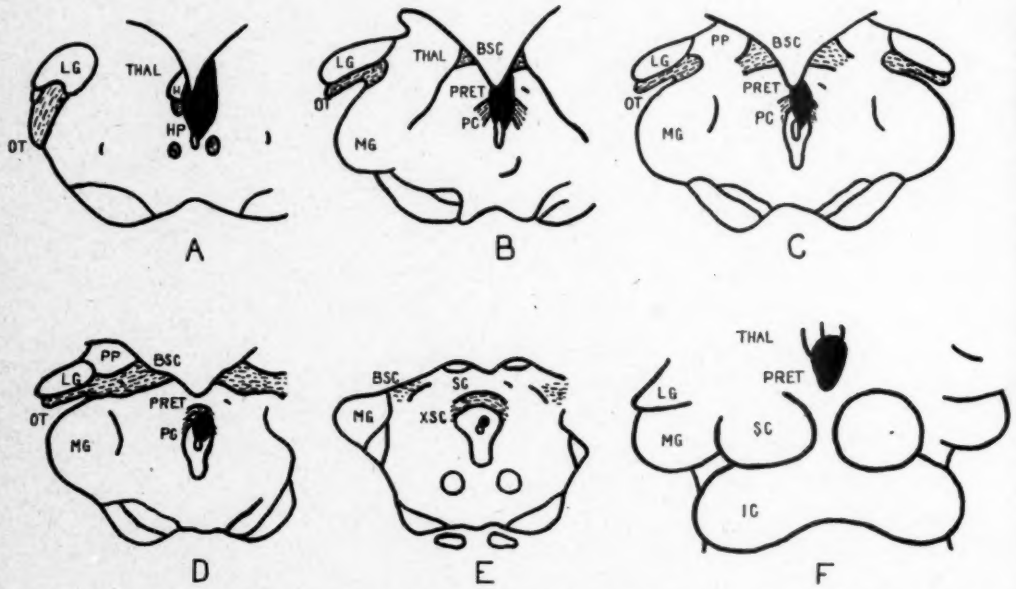

Fig. 2 (Magoun, Ranson, and Mayer). The location of the lesion in Cat 72 is shown, in solid black, in five transverse levels extending from the caudal portion of the thalamus, A, through the pretectal region, B, C, D, to the rostral portion of the superior colliculus, E. The position of the lesion is shown also on the dorsal surface of the brain stem, F.

lowered 1 and 2 mm. below this point, and at each of these levels the current was again applied for 30 seconds. The electrode was then removed from the brain, moved forward, and inserted at 6 mm. and then at 7 mm. rostrad of the zero transverse plane, and on each of these punctures, three lesions were and 6 mm. rostral to the zero transverse plane of the instrument. It was halted one-half millimeter above the zero horizontal plane, and a direct current of 3 milliamperes was applied for 15 seconds.

Following the operation, the light reactions of these animals were studied

Table 2

DATA ON PUPILLARY REACTIONS OF CAT 90 FOLLOWING OPERATION.
All measurements in mm.

Post-Operative Interval	Before Lighting		Lighting Right Eye		Lighting Left Eye	
	Width Right Pupil	Width Left Pupil	Width Right Pupil	Width Left Pupil	Width Left Pupil	Width Right Pupil
3 days	6	8	0.7	2	1	1
7 days	7	10	1	3	1.5	0.3
11 days	6	8	0.3	1.5	0.8	0.3

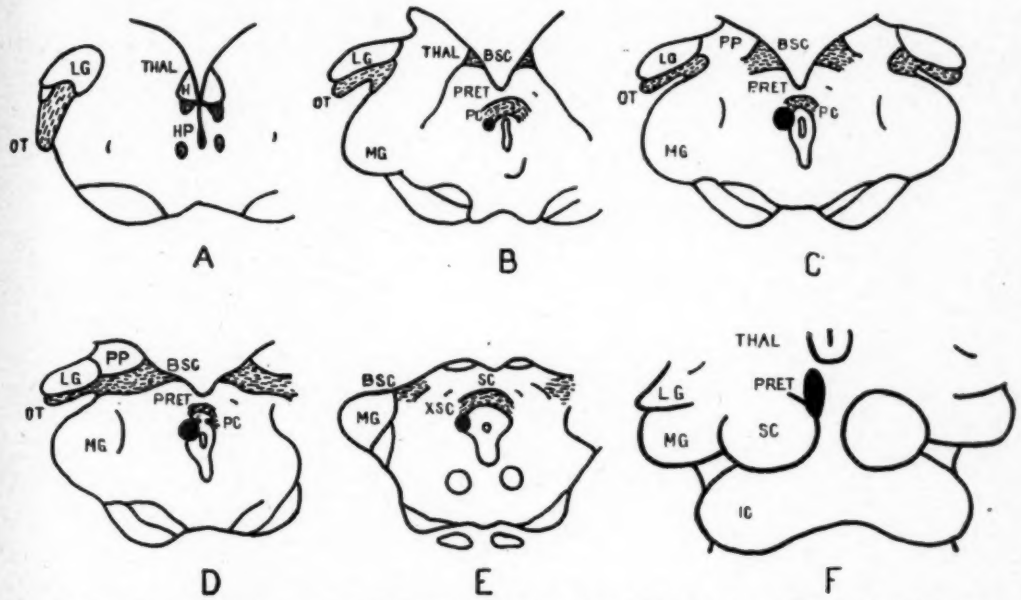

Fig. 3 (Magoun, Ranson, and Mayer). The location of the lesion in Cat 90 is shown, in solid black, in five transverse levels extending from the caudal portion of the thalamus, A, through the pretectal region, B, C, D, to the rostral portion of the superior colliculus, E. The position of the lesions is shown also on the dorsal surface of the brain stem, F.

at intervals over a period ranging from one to four weeks. In testing the light reflex, the width of the pupils was measured in millimeters before and during lighting, both for the direct and consensual reactions. In the dimly lighted

List of Abbreviations Used in Figures 2 and 3.

BSC	Brachium of superior colliculus
H	Habenula
HP	Habenulo-peduncular tract
IC	Inferior colliculus
LG	Lateral geniculate body
MG	Medial geniculate body
OT	Optic tract
PC	Posterior commissure
PP	Pulvinar pars posterior
PRET	Pretectal region
SC	Superior colliculus
THAL	Thalamus
XSC	Commissure of the superior colliculus

room in which these tests were made, the pupils measured as a rule about 10 mm. before lighting. The degree of illumination of the "fountain pen" flashlight which was employed was sufficient to produce a constriction of the pupils of a normal cat to a width of 1 mm. or less, and a reaction of this extent may be referred to as a normal light reflex. In the case of the animals with complete midsagittal lesions of the posterior commissure, a reaction of only half this amount, from 10 mm. to 5 mm., was usually obtained, and this may be referred to as approximately one half of the normal light reaction.

In addition to this quantitative estimate of the total amount of light-reflex reduction, the question of localization of impairment in the retina was studied by observing the pupilloconstriction from selectively lighting in succession the nasal and the temporal halves of the retina with a fine vertical beam of light from a pupilloscope.

At sacrifice the brain was injected *in situ* with formalin through the arteries, a block including the lesion was cut out, imbedded in celloidin, and cut serially. Every fourth section through the lesion was stained by the Weil method and mounted. For purposes of comparison, the amount of damage in each case was plotted on a standard series of drawings reproduced in figures 2 and 3.

Observations

In each of the five cats in which the posterior commissure had been destroyed in the midline, the pupillary reaction to light was impaired but was not abolished. The light reflex was reduced to approximately one half of the normal reaction in three animals, to one third of the normal in one animal, and to three quarters of the normal in one animal.

A small amount of injury to the pretectal region, which has been demonstrated as an important part of the light-reflex pathway (Ranson and Magoun[7]; Magoun and Ranson[9]), was unavoidable in producing these lesions. The variability in the reduction of the light reflex in these animals does not appear, however, to bear any relationship to the small amount of pretectal damage which occurred in each case. This damage was as a rule confined to one side of the pretectal region, yet the light-reflex impairment was equal in the two eyes. It did not exhibit the marked asymmetry characteristic of unilateral pretectal lesions[9], after which the light reactions of the contralateral eye are much the more severely impaired.

In each case also, the caudal portion of the thalamus was injured on one or both sides of the third ventricle, but it has been shown that this occasions no lasting reduction in the light reflex[9]. The conclusion appears inescapable that destruction of the posterior commissure impairs the light reflex.

In three of these animals in which the posterior commissure had been destroyed in the midline, the light reactions from selectively illuminating either the nasal or the temporal half of the retina were observed. In each case no difference in the appearance of the respective reactions could be noted, and no evidence for the localization of the light-reflex impairment in the retina could be obtained.

One of these animals may be described in detail. For the extent of its survival time of three weeks, Cat 72 showed (table 1), from lighting either eye, direct and consensual pupillary reactions which were reduced to approximately one half of the normal light reflex. Selective lighting of the nasal half of the retina produced as good a reaction as did selective lighting of the temporal half of the retina. A tendency toward miosis was apparent on the day following operation when the pupils measured 6 mm. in width, but not subsequently when the width of the pupils ranged between 10 and 11 mm., all measurements being made in a dimly lighted room.

The lesion (fig. 2) destroyed the caudal portion of the thalamus, chiefly on the right side, a small amount of the medial edge of the right half of the pretectal region, and the entire poste-

rior commissure in the midline. The superior colliculus remained wholly intact, and only the most rostral tip of the commissure of the superior colliculus was injured.

In the cat nearly all of the light-reflex fibers of the optic nerve cross in the chiasma (Karplus and Kreidl[5]) and the crossed fibers in one optic tract arise from both the temporal and nasal halves of the opposite retina (Overbosch[10]). Since, in this animal, impairment of the light reflex following destruction of the posterior commissure is not localized in either the nasal or the temporal half of the retina it would appear that the posterior commissure contains fibers carrying impulses from both retinal halves.

In the two cats in which a small unilateral lesion injured the fibers of the posterior commissure as they swung ventrally around the rostral central grey matter of the aqueduct, the light reflex was slightly impaired in one animal and in the second appeared perfectly normal. The case showing slight impairment may be described in detail.

Cat 90, studied for eleven days, exhibited (table 2) a normal activity of the right pupil, but showed a slight impairment in the light reaction of the left pupil. This impairment was the more marked in the consensual reaction of the left pupil to illumination of the right eye. In addition, the left pupil did not react quite so much to direct illumination as did the right, and reacted less briskly. While this reduction in the light reflex of the left pupil was readily discernible, it was not large, and at the final test (eleven days after operation) the reactions of the left pupil were only very slightly less than those of the normal right pupil. For the extent of survival of the animal, the left pupil was slightly larger than the right when measured in a dimly lighted room, but neither pupil could be said to be miotic. A representative measurement of the widths of the pupils was: left, 8 mm.; right, 6 mm.

The lesion (fig. 3) destroyed the caudal two thirds of the posterior commissure on the left side of the brain, ventral to the pretectal region, and injured the rostral fibers of the commissure of the superior colliculus on the left side, together with a small amount of the adjacent central grey matter of the aqueduct. The rostral third of the posterior commissure remained intact.

A similar lesion was made in a second cat, but no impairment in the light reactions of this animal could be discerned. In two animals, therefore, material injury to the fibers of the posterior commissure lateral to the central grey matter of the aqueduct, led in one case to a slight impairment in the light reactions of the ipsilateral eye, while in the second case the light reactions remained normal. Two explanations may be offered for the absence of greater impairment in the light reactions of the ipsilateral eye under these conditions. In the first place, fibers which passed forward of and lateral to the lesion to reach the ipsilateral half of the oculomotor nucleus may have been sufficient to maintain its activity. Secondly, fibers reaching the half of the oculomotor nucleus in question from the opposite side of the brain by way of a ventral decussation in the light-reflex pathway, undoubtedly contributed to the maintenance of its function. Evidence has already been presented (Ranson and Magoun[7]) for the existence of a partial decussation in the light-reflex pathway ventral to the central grey matter of the aqueduct.

It is clear from the observations which have been made in the present study and from the results of other workers mentioned in the introduction, that the light-reflex pathway is not completely crossed in the posterior commissure of the cat. It is improbable, however, that this observation may be applied directly to man. We know that the crossing of the light-reflex pathway in the optic chiasma differs in the cat and man[11], and the same may hold true regarding the central decussation in this pathway. Until an investigation of this problem is made in the primate, we feel, therefore, that any discussion of the relationship of these observations to the phenomena of the

unilateral Argyll Robertson pupil would be premature.

Summary

1. Following destruction of the posterior commissure in the midline, the light reactions of the cat are reduced but not abolished, indicating a partial but not a complete central decussation of the light-reflex pathway in the posterior commissure of this animal.

2. Following such lesions, no evidence for the localization of the light-reflex impairment in either the nasal or the temporal half of the retina could be obtained. Since the greater part of the light-reflex pathway is crossed in the optic chiasma of the cat, it would appear that in this animal that part of the light-reflex pathway which undergoes a central decussation in the posterior commissure carries impulses from both the nasal and temporal halves of the retina, most, if not all, of which have already crossed in the optic chiasma.

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LOCAL QUININE THERAPY IN TRACHOMA

Preliminary Report

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Locally quinine, besides being an astringent and bactericide, is mildly anesthetic and is a protoplasmic poison which acts on the nutrition of the cell protoplasm. It penetrates deeply into the tissues and its destructive action on leucocytes, lymphocytes, and other cellular elements has long been known. Because of these properties it was used in the treatment of trachoma after animal experiments had shown that it is not harmful to the normal cornea and conjunctiva in the concentrations employed. The results obtained with this form of treatment in trachoma and a few other diseases of the cornea and conjunctiva are encouraging. From the Department of Ophthalmology, Rush Medical College, University of Chicago.

Trachoma is probably the most widespread ocular disease in the world and responsible for a greater percentage of blindness than any other disease of the eye. Its eradication can be accomplished only by proper prophylactic and educational measures carried out on a world-wide scale. A good deal of progress is being made in this direction but it will be many years before this goal is reached. In the meantime we are confronted with the problem of the active treatment of trachoma.

That the active treatment of trachoma is, at the present time, unsatisfactory is evidenced by the fact that the duration of treatment often extends over several years and that so many different therapeutic agents have been and are being used. Among the therapeutic measures employed are: Copper sulphate in the form of a solid stick, as an ointment, and in glycerine solution; silver nitrate, lead acetate, alum, bichloride of mercury, oxycyanide of mercury, protargol and other organic silver salts, iodides, chaulmoogra oil, carbon-dioxide snow, benzyl cinnamic ester, copper thiosulphate (the last two by injection), antivirus of Besredka, sodium carbonate, massage of the conjunctiva with sodium chloride and boric-acid crystals, autoserotherapy, acetic acid, ultraviolet and x-ray radiation, radium, and many others. Attempts have been made to immunize the conjunctiva against trachoma. Jequirity and other irritating substances as well as inoculation with gonococci have been used to cure the trachomatous process by producing a more violent inflammatory reaction.

The treatment most widely used at the present time is the application of the solid-copper-sulphate stick to the anesthetized conjunctiva. Copper sulphate was used in the treatment of trachoma by the ancient Greeks and Romans. Its action depends on its astringent and corrosive effect on the conjunctiva. In severe, acute cases of trachoma, after several daily applications of 1-percent or 2-percent silver nitrate, it has to be applied daily for several weeks or even months, later every second day for several more months, then twice a week for a year or longer, and finally less often for one to several years more. Altogether, the treatment may last from 2 to 5 years or even longer.

This treatment is effective, but in addition to being tedious it is quite painful, in spite of the fact that the trachomatous conjunctiva is less sensitive than the normal conjunctiva. There is also always the danger of causing permanent corneal opacities by accidentally bringing the stick in contact with the cornea. Furthermore, there are certain patients who cannot tolerate the copper stick and respond with a violent reaction to all forms of irritating medication. I had occasion to treat such a patient at the Rush eye dispensary. This patient was a 59-year-old white woman who had severe pain in her eyes for several days following each application of the copper stick, had violent inflammatory reactions after the use of an alum stick, and could not use a 3-percent copper-citrate ointment because of the severe reactions following its use. Other forms of treatment were

equally poorly borne. After three years of treatment the patient continued to get progressively worse.

It occurred to me that the primary corrosive action of drugs used in the treatment of trachoma was not the most desirable method of treatment. A better drug for the treatment of this condition should combine, with a minimum corrosive action, the property of penetrating deeply into the tissues of the conjunctiva, should destroy or at least inhibit the growth of the cellular elements making up the follicular and papillary trachomatous masses, should be bactericidal in its action, and not too irritating nor painful for prolonged use. Such a drug is quinine.

Quinine is an alkaloid and for that reason, like atropine, passes through living cell membranes. It has an antiseptic action not only on protozoa (malarial organism) but also on bacteria and certain yeasts, and is a protoplasmic poison which, unlike many other alkaloids, acts on the general nutrition of almost all forms of protoplasm. As stated by Cushny[1], "the effects of quinine on protoplasm generally consist in transitory augmentation of its activity, followed by depression and death." Binz[2] found that in and out of the blood vessels quinine inhibits and then stops the ameboid movement of leucocytes and finally causes them to break up into debris. Bastedo[3] in his book states that in the blood vessels leucocytes are reduced to one half or one fourth the normal amount and that there may be a primary rise in lymphocytes as a result of contraction of the spleen. Roth[4] found that the reduction in lymphocytes after quinine is particularly marked. It is unnecessary to go into the detailed chemical properties and special pharmacological action of quinine on the various general systems of the body. It is well, however, to remember that the antagonists and incompatibles of quinine are: ammonia, lime water, alkalies, preparations of iodine, iodides and bromides, tannic acid, metallic salts such as mercury, copper, lead, and zinc. Among the synergists are iron arsenic, and mineral acids.

It is surprising that quinine has not been used to any extent in the form of local applications in ophthalmology. Parsons[5], in his textbook states that it has been recommended as a lotion in diphtheritic conjunctivitis and deSchweinitz[6] advocates its use internally in many ophthalmological conditions. The only reason I can think of for the fact that this drug has not been used in the form of local applications in many inflammations of the anterior segment is the general fear of its toxic action on the eye. There have been many reports in the literature of cases of toxic amblyopia after internal administration of quinine, even in comparatively small doses, and ulceration of the cornea with destruction of the eye has been noted after the local use of optochin (ethylhydrocuprein) in pneumococcic conjunctivitis. The likelihood of a toxic amblyopia following the topical application of quinine is very remote if we consider that only a small fraction of a grain is actually absorbed by the tissues when the drug is applied locally. Smith and Fantus[7] found that optochin, a substitution product of quinine, is twice as toxic as quinine in its action on unicellular organisms and also more toxic to frogs and mice, and that it causes more injection, chemosis, and fibrinous exudation. R. Ash and M. Solis-Cohen[8] noted that pneumococci develop fastness to optochin but none to quinine.

The only reference in the literature I could find to the use of a quinine product in the treatment of trachoma was the use of a 5-percent solution of quinine urea hydrochloride as a sclerosing solution by P. Thomas[9], who injected it subconjunctivally into the fornices. He reports good results in acute cases after two to four injections, poor results in cases of long standing. If other methods and forms of quinine therapy have been used I have not found any record of it, despite a careful search of the literature.*

* A. Leber and S. v. Prowazek (Ber. ü.d. 39. Vers. d. ophth. Gesellsch., Heidelberg, 1913, p. 148) mention having used a 1-percent quinine-hydrochloride and quinine-sulphate solution in the treatment of trachoma. In Löhlein's discussion of that paper he said that

Experimental

To determine whether the local application of quinine would cause any harm to the living tissues of the eye the following experiments were carried out:

Animal experiments. Daily applications of a saturated aqueous quinine bisulphate solution (10 percent); quinine bisulphate powder; 6-, 8-, and 10-percent quinine bisulphate ointment; and 50-percent dihydrochloride of quinine were made to the eyes of 6 rabbits for several weeks. Only the rabbit receiving the dihydrochloride showed evidences of conjunctival irritation which manifested itself in the form of lacrimation and moderately marked hyperemia and swelling of the conjunctiva. The cornea seemed unaffected. The other animals showed no demonstrable evidences of conjunctival or corneal irritation. To determine whether the traumatized cornea would show any deleterious effects from the quinine the corneae of these animals were scarified under pantocaine anesthesia and the same quinine preparations used daily for two weeks. Only the rabbit treated with the dihydrochloride solution showed a slight infiltration in the traumatized area. All the corneal lesions in all the animals healed in a few days.

Human experiments: On the human subject a saturated aqueous solution of quinine bisulphate was used. This particular salt of quinine was selected because of its comparatively great solubility in water (1 gm. is soluble in 9 c.c. of water). It is less acid and therefore less irritating than the much more water-soluble dihydrochloride (1 gm. is soluble in 0.6 c.c. of water). Quinine-bisulphate powder is a little too irritating for repeated application. The use of optochin was considered but rejected because of its greater toxicity. Quinine urea hydrochloride was also rejected because it produces a high degree of local anesthesia which may last for several days and which was considered dangerous, and because it was feared that the sloughing it is said to induce might counteract any benefits expected from its use.

After properly anesthetizing the conjunctiva with one-half percent pantocaine, the quinine-bisulphate solution was applied to the fornix and palpebral conjunctivae with a cotton-wound applicator dipped freely into the solution. The application was made with a firm stroking movement until the conjunctival surfaces assumed a bluish milky color. A freshly dipped applicator was used on each of the 4 lids (in bilateral cases) and the application to each lid required about 1 minute or slightly more. After each treatment the patient was given some gauze with which to apply cold compresses to the eyes for a few minutes. The burning sensation which followed the treatment was considerably less marked than that which follows the application of the copper stick and lasts a much shorter time. The discomfort also diminshes after the first few treatments. The patients were given at first a 2-percent, later when the burning sensation following the application of the ointment became less marked, a 4-precent quinine-bisulphate ointment to be applied to the conjunctivae twice a day. No other medication was used except atropine and hot compresses in cases with pannus and corneal ulceration. Neither pannus nor corneal ulcer was considered a contraindication to the treatment. The quinine-bisulphate solution was applied twice a week at first, later, when the objective findings were almost entirely cleared up, once a week, and finally once every two weeks. The ointment was used twice a day throughout. There is no evidence of a cumulative action of the drug.

M. Solis-Cohen and T. H. Githens[10] state that in man, after 1 gm. of quinine by mouth, the elimination begins in one-

these solutions had proved disappointing in his clinic. (Both the hydro-chloride and sulphate of quinine are much less water soluble than is bisulphate of quinine. The poor results obtained may be ascribed to the weak concentration and the less water-soluble salts. Author's note.) Comenge (Siglio Medico, Madrid, 1925, v. 76, August 29, p. 208) refers to a quinine therapy also, but which salt of the quinine was used and by what method it was administered I have been unable to learn.

half to 1 hour, reaches its maximum in 3 to 5 hours and is complete in 14 to 48 hours. It is very likely that the duration of the disease could have been shortened if the patients could have been treated every second or possibly even every day.

With so few trachoma patients available it was impossible to run control series in which the drug could be used at different intervals on different groups of patients. The use of the ointment helps to keep the tissues under the influence of the drug but it is very likely that the higher concentration of the solution would speed up the process of recovery. There is also no doubt that the course of treatment could have been shortened in the cases with large granules if expression of the granules had been carried out.

Most of the patients noted a slight increase in the secretion for a few days with subsequent absence of secretion and there was a definite subjective improvement in a few days. Whether this is due to the slight anesthetic effect of the quinine or to the improvement in the inflammatory condition cannot be definitely stated. Morgenroth and Ginsberg[11] state that quinine, like optochin, is slightly anesthetic to mucous membranes.

Case Reports

Case 1. M. W., a 45-year-old white woman, was seen at the Rush eye clinic April 25, 1934. She complained of redness, lacrimation, and foreign-body sensation in the right eye at intervals for 4 years. One year before admission to the clinic she had had an operation on the right eye (probably an expression of granules). The right eye showed large clusters of glassy follicles in the nasal half of the lower palpebral conjunctiva. One granule was particularly large, measuring about 7 mm. in diameter. There were linear scars between the follicles and the granular hypertrophy extended to the vicinity of the outer canthus. A large scar occupied the main portion of the lower fornix and an anterior symblepharon was present. The upper palpebral conjunctiva showed rows of small granules at the upper edge of the tarsus. A few linear scars were present near the inner canthus. The tarsal conjunctiva was moderately injected and showed papillary hypertrophy. The plica semilunaris was thickened and had several granules. A slight injection of the bulbar conjunctiva was also present.

The left eye was normal.

The saturated quinine-bisulphate solution was applied twice a week to the fornix and palpebral conjunctiva of the right eye and 2-percent quinine-bisulphate ointment was prescribed for use at home twice a day. After a few weeks the 4-percent ointment was prescribed. Within one week the subjective symptoms were fully relieved and in 4 months the granular and papillary hypertrophy had disappeared. The patient is coming in for treatment once a week and is continuing to use the ointment at home. This would have been an ideal case for expression of the granules, especially the large granule described above but this was not done in order to judge the effect of the drug on the granule formations.

Case 2. F. Z., a 37-year-old white male was seen at the Rush eye clinic in April, 1934. He had a bilateral severe recurrent trachoma with marked papillary hypertrophy of the tarsal conjunctivae and granular formation in the fornix conjunctivae of both eyes. Both tarsal plates were definitely thickened and enlarged. A bilateral pannus was present. Atropine was prescribed and the saturated quinine-bisulphate solution applied twice a week. Quinine-bisulphate ointment, first 2 percent, later 4 percent, was given for use at home twice a day. The subjective symptoms improved in a few days, although the secretion was more profuse for about one week, after which it ceased completely. After 3 months of treatment the conjunctival surfaces were almost normal in appearance. The patient discontinued attendance although he had been warned, at the time of admission, to continue treatment for one year.

Case 3. C. L., a 59-year-old white woman came to the clinic February 13, 1931, with a history of symptoms lasting one year. Marked follicular and papillary hypertrophy of the fornix and tarsal conjunctiva of both eyes as well as great thickening of both plicae semilunares was present. There was a pannus of the left cornea and many fine posterior corneal deposits.

Atropine was prescribed for the left eye and 1-percent silver nitrate applied to the conjunctivae of both eyes. The patient complained of severe pain in the eyes following treatment with the silver nitrate, although the conjunctivae were well anesthetized and the silver nitrate applied very lightly. Copper sulphate had to be discontinued after a few weeks because of the severe reaction produced by it, even though applied only at semiweekly intervals. Alum stick and 1-percent tannic acid were also not tolerated; 1-percent zinc sulphate had to be discontinued for the same reason, and 3-percent copper-citrate ointment could not be borne. Bichloride ointment produced a dermatitis and had to be discontinued. A Mantoux test was positive and tuberculin therapy together with viosterol and cod-liver oil was tried for several months without success. A general medical examination as well as blood Wassermann was negative for pathology. Copper sulphate was tried again but had to be given

up after a corneal ulcer developed in the left eye in February, 1934. After the corneal ulcer healed a dacryostenosis developed on the left side.

In the meantime the conjunctivae of both eyes, but especially of the left eye, had become more and more diffusely hypertrophied, somewhat gelatinous in appearance and markedly hyperemic. Both plicae were greatly swollen and injected.

Three years after her first visit to the clinic, in April, 1934, treatment with quinine-bisulphate solution was started in both eyes twice a week and 2-percent ointment given for use at home. The patient began to improve subjectively but 17 days later developed a serpiginous ulcer of the left eye which necessitated hospitalization for two months. The left tear sac was removed on the day the patient entered the hospital. The treatment for the trachoma was discontinued for 3 months during which time the ulcer which had not perforated but which had covered the lower two thirds of the cornea (up to the edge of the pannus) had healed.

On July 17, 1934, the treatment with quinine-bisulphate solution and ointment was resumed. During the first few applications of the solution the hyperemic palpebral conjunctivae showed a few bleeding points. At the present time the patient is free from subjective symptoms and the trachomatous changes are definitely regressing although there is still a great deal of diffuse swelling of the fornix and palpebral conjunctivae as well as of the plicae of both eyes. The patient is tolerating the quinine much better than any other form of treatment previously employed.

Case 4. M. I. M., a 48-year-old white woman, was seen for the first time at the clinic, May 24, 1933. Her symptoms were of five years' duration, more marked for two years. She had a moderately severe bilateral trachomatous process with scar formation in the upper palpebral conjunctivae, and papillary and granular hypertrophy as well as bilateral pannus formation. After 1 year of treatment with the copper stick there was definite improvement both subjectively and objectively, but the process was still quite active when treatment with quinine solution and ointment was started in April, 1934. After one month of this therapy the patient was almost free from objective findings, when she transferred to another more conveniently located clinic because of change in her residence.

Case 5. C. F., a 41-year-old white woman, came to the clinic April 6, 1934, with an acute exacerbation of an old trachoma of the left eye. There was extensive scar-tissue formation in both fornix and palpebral conjunctiva, marked hyperemia and papillary hypertrophy of the upper and lower fornix conjunctivae and an unusually thick and succulent pannus. Several old corneal maculae were present and there was distichiasis of the cilia along the nasal half of the upper lid. In addition to epilation of the misdirected cilia, atropine and heat were prescribed because of the thick pannus. Quinine-bisulphate solution and ointment were used from April 6, 1934, to May 1, 1934. By this time there was a great improvement in the appearance of the conjunctivae but the patient developed fresh corneal infiltrates and the quinine was stopped temporarily. One month later the quinine was resumed, and within four months the conjunctival surfaces were smooth and pale and the pannus had become less succulent in appearance. On October 8, 1934, the patient developed a severe iridocyclitis in the eye under treatment. She is being treated for this complication at the present time. Her conjunctivae show evidences of a collateral injection but no active trachomatous process.

Case 6. M. F., a 50-year-old Assyrian woman, was first seen at the clinic, June 29, 1934, at which time she gave a history of having had symptoms of a severe bilateral chronic conjunctivitis of six to eight months' duration. Examination showed a fresh, active, moderately severe bilateral trachoma with considerable enlargement of both upper tarsal plates, hypertrophy of both plicae semilunares and bilateral pannus. Under atropine and quinine-bisulphate therapy she improved so rapidly that after three months the eyes were almost normal in appearance. After September 14, 1934, she failed to return for treatment for five weeks when she returned with subjective and objective findings of an exacerbation of the trachomatous process. This patient too had some bleeding points on the upper tarsal conjunctivae after the first few treatments.

Case 7. L. S., a 29-year-old white man, was first seen at the clinic, November 13, 1933. He had a fairly severe bilateral trachoma with bilateral pannus formation of one year's duration. After five months of copper-sulphate therapy the process was still quite active. On April 9, 1934, he was put on the quinine therapy, and the copper stick was discontinued. After three months of this treatment the conjunctivae became normal in appearance and the patient is now coming in for his treatment once every two weeks. He still uses the 4-percent ointment twice a day.

Case 8. B. F., a 48-year-old white woman, was first seen at the clinic, June 20, 1934. Her symptoms were of six months' duration. She had a severe active bilateral trachoma with marked hypertrophy of both upper tarsi, marked redness and papillary hypertrophy of the palpebral conjunctivae, and extensive granule formation in the fornices and along the upper edges of the superior tarsi. Both plicae were considerably swollen and there was a pannus in each eye. The right cornea had a fresh superficial infiltrate. In addition to atropine and heat, only the quinine was used. At first there was slight bleeding of the upper tarsal conjunctivae after each application of the quinine solution. The subjective symptoms cleared up after two weeks and objectively the conjunctivae are practically normal in appear-

ance, aside from a few remaining granules after four months of treatment. The patient will be kept on this therapy for six months after she is clinically free from pathology.

Just how the beneficial results of quinine therapy in trachoma are to be explained is difficult to decide at the present time. The corrosive action may play a rôle, but in my opinion only a small one. To its action as a protoplasmic poison the rapid disappearance of the papillary and granular changes are probably chiefly due. To the question which naturally arises, namely, as to why this toxic action should not be equally harmful to the normal constituents of the conjunctiva and cornea, the answer may be made that new cellular invaders are less resistant to the toxic action of drugs. That is a well-established biological fact. Just what the action of quinine on the causative agent of trachoma is cannot be known until the nature of this agent has been definitely proved or until inoculation experiments in man and apes are carried out with material obtained from patients treated with quinine for varying lengths of time. That patient No. 6 had a relapse after discontinuing treatment before all the clinical evidences of trachoma had cleared up is no evidence that there is no bactericidal effect of quinine on the trachoma organism, because similar relapses are seen after inadequate antimalarial, antiluetic and other treatments. As this work is still in its preliminary stages it is perhaps safest to continue the treatment of clinically symptom-free cases, although at less frequent intervals, for six months or longer after all evidences of trachoma have disappeared. As more data are accumulated it will be possible to determine when the treatment can be safely discontinued.

In order to determine the effect of quinine on pathological accumulations of lymphocytes in tissues which readily permit observations with the naked eye and the slitlamp, a 2-percent quinine-bisulphate ointment was prescribed in a few cases of active interstitial keratitis, because in this disease the corneal opacities can be easily seen and changes noted as they occur. A decided decrease of the photophobia was observed within a few days and the deep infiltrates definitely became less dense although fresh opacities, but much lighter in density, made their appearance from time to time. The course of the disease also seemed much milder. A more detailed description of the action of quinine in interstitial keratitis as well as in a few other diseases of the anterior segment of the eye characterized by lymphoid infiltration will be made in the near future. Photographic studies of these cases are being made. Further laboratory and clinical experiments are being carried on to show the effect of quinine on cellular infiltrates in the tissues of the cornea and conjunctiva.

At my request Eli Lilly & Co. of Indianapolis, Indiana, are now manufacturing a 2-percent and a 4-percent quinine-bisulphate ointment. The saturated aqueous bisulphate solution can easily be made up.

Summary and Conclusions

Quinine, besides being an astringent and a bactericide, is a protoplasmic poison which, because of its alkaloidal properties, penetrates deeply into the tissues on being applied locally to mucous membranes. It destroys pathological accumulations of lymphoid tissue by its action as a protoplasmic poison and this same property inhibits new invasions of the tissues by cellular elements. Animal experiments show that the normal and traumatized cornea is not injured by the concentrations of quinine bisulphate advocated in the treatment of trachoma. The treatment of trachoma with quinine bisulphate is less painful than that with the copper-sulphate stick and the duration of the disease is considerably shortened. Some other diseases of the anterior segment of the eye seem to be favorably affected by the local application of quinine.

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UVEOPAROTID FEVER

Case Report

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A case of uveoparotid fever with the triad of bilateral uveitis, swelling of the parotid glands, and prolonged fever, is reported in a 29-year-old woman. Evidence is advanced pointing to a tuberculous etiology. The case and the disease are discussed in the light of the outstanding literature on the subject. From the Massachusetts Eye and Ear Infirmary. Read before the New England Ophthalmological Society in December, 1934.

In 1909 Heerfordt[1] described three of his own cases and collected from the literature two others[2], all five of which had in common the essential triad of bilateral uveitis, swelling of the parotid glands, and a low-grade, prolonged fever. This syndrome he called "Febris uveoparotidea subchronica"; he believed it to be an atypical form of mumps.

Since this original description of the syndrome there have been sporadic reports, totaling no more than sixty cases, with an excellent review of the whole subject, in 1931, by Merrill and Oaks[3] and a still more comprehensive review, in 1933, by Garland and Thompson[4]. But, strangely enough, as remarked by several European writers, there have been few cases reported in this country, four in all, most of the them having occurred in Scandinavia and Germany. It therefore seemed worth while to report the following case, as it exemplified the syndrome so fully and supported the current Continental opinion as to the tuberculous etiology of the disease.

Case Report

M. D., a 29-year-old, American-born married woman, was seen for the first time in June, 1934, on the service of Dr. Edwin Dunphy, at the Massachusetts Eye and Ear Infirmary. Her complaint was blurring of the vision of both eyes, intermittent and painless, during the previous two months. She also gave a history of malaise, morning sputum, night sweats, and loss of thirty pounds in weight. A few days prior to her first visit she had noticed swelling in the parotid regions but, as this was painless, she mentioned it only when questioned specifically; she had also observed some asymmetry of her facial movements but this had not concerned her particularly.

Regarding significant past history, she had had typical mumps some six years previously and scrofula in childhood; the cervical glands had erupted through the skin at this time.

The patient was admitted to the hospital and examination showed the following positive findings:

General. There was a complete right

facial palsy of the peripheral type with inability to close the right eye. A small preauricular gland was palpable on the right. The neck showed bilateral scars of the childhood scrofula with subjacent shotty lymph glands. Just behind the angles of the lower jaw on both sides were nodular, painless masses. In the Tumor Clinic they were believed to be enlarged parotid glands, probably on an inflammatory basis, but no pus could be expressed from Stenson's ducts.

Eye examination: O.D. Vision = 20/200; tension normal. There was a slight ciliary injection, and a few round lardaceous deposits on the posterior surface of the cornea. The cornea appeared roughened but did not take the fluorescein stain (presumably due to exposure). The anterior chamber showed a few cells. There were many posterior synechia and an abundant fibrinous exudate at the pupillary margin. No nodules were seen. The pupil dilated irregularly with subconjunctival adrenalin. The fundus, seen hazily, was negative except for a slight edema about the nerve head. No opacities were made out in the vitreous.

O.S. Vision = 20/50. Examination was essentially the same as in the other eye, there being only a slight ciliary injection, few keratitic precipitates, few cells in the anterior chamber, many posterior synechiae, and abundant fibrinous exudate.

Laboratory studies and investigative consultations resulted as follows:

Blood: RBC 4,000,000; WBC 5,000. Hemoglobin 80 percent. Differential: polymorphonuclears, 56 percent; lymphocytes, 38 percent; monocytes, 4 percent; eosinophiles, 2 percent; basophiles, none.

Tuberculins were reported "suspicious" in dilutions of 1/100,000 and 1/40,000. Serology: Hinton and Wassermann, negative. Urinalysis: negative. X-ray examination of teeth, sinuses, chest, and mastoids showed only a few abscessed teeth.

Consultation with the internists resulted in the opinion that the patient might be tuberculous in view of the malaise, loss of weight, night sweats, and morning sputum. Dental consultation: positive Vincent's infection of the mouth. Nerve consultation: "believe facial palsy to be on a toxic basis and less likely that swollen gland could account for it." Gynecological consultation: negative.

Course in the hospital: The patient had a low-grade temperature ranging between 99° and 101° with diurnal fluctuations maximal in the late afternoon. The swelling of the parotids increased somewhat for a week and then retrogressed very slightly. The facial palsy which was always limited to the right side seemed to improve concomitantly with the retrogression of the parotid swelling. The condition of the eyes remained apparently unchanged.

Examination two months later showed marked improvement in the patient's general condition. She had been treated as a convalescent tuberculous patient and no longer complained of malaise or of night sweats and was regaining weight. The facial palsy had entirely disappeared; there was only a slight residual swelling in the parotid regions. However, she continued to show a few precipitates on the posterior surface of the cornea and a few cells in the aqueous. The synechiae were also present as before.

The patient was again seen four months and six months after her first visit to the Clinic and still showed a few precipitates and cells in the aqueous, although the eyes were practically white and obviously much improved. Generally she felt perfectly well.

Discussion

Occurrence. Uveoparotid fever occurs in the female sex about twice as often as in the male[3]. It has a strong predilection for the second and third decades of life. A few cases have been noted in the same family but the large majority are isolated occurrences. There is no evidence of its having occured in epidemic proportions.

Etiology. Heerfordt[1] considered uveoparotid fever an atypical form of mumps and searched the literature for ocular complications of this disease.

However, in many of the cases, including our own, there is a past history of mumps. None have been reported with such complications as orchitis, and the prolonged course of the disease is entirely different from that of mumps. Mumps is not, therefore, considered a tenable explanation.

Syphilis has been suggested, but its presence in uveoparotid fever is infrequent and probably coincidental.

Mikulicz's disease is held by some to be essentially the same condition and Schaffer and Jacobsen[5] have incorporated a case of uveoparotid fever in their group of Mikulicz cases. It is true that, exclusive of the uveitis, uveoparotid fever and the Mikulicz syndrome have several similarities and, as Fuchs suggests, they may be manifestations of the same process. But Mikulicz's disease is a clinical syndrome, not a true disease entity, and we are still uncertain about the etiology of uveoparotid fever, even though we admit a clinical similarity with the heterogeneous group of Mikulicz cases. It may, however, be of some significance that a certain proportion of Mikulicz cases have been proved to be of a tuberculous nature.

In a review of the thirty available case reports in 1931, Merrill and Oaks were led to make the following inconclusive statement regarding etiology: the "weight of evidence to date points to some specific virus, bacterium, or agent as yet unknown."

Finally we come to the prevailing belief on the Continent, that uveoparotid fever is a tuberculous manifestation, probably of the fibrosing, noncaseating, lymphadenopathic type. Our case, in which there had been a history of scrofula in childhood with residual cervical scars and palpable lymph glands, with a clear chest by X-ray examination, would endorse this. In as much as uveoparotid fever is not ordinarily lethal, post-mortem examinations are wanting. But of the four cases in which post-mortem studies have been made, three were of miliary tuberculosis (Bang[6], Souter[7], and Garland and Thompson) while in the fourth death was from pernicious anemia some years after the patient had recovered from the uveoparotid fever.

It is also of interest to know that in one of the original cases reported by Heerfordt and supposed by him to be a case of atypical mumps, tuberculosis was found later. It may also be of some significance from the clinical side that the iritic nodules which are considered by some to be pathognomonic of syphilis or tuberculosis have been found in somewhat over half the cases of uveoparotid fever although not in ours. Certainly the course of the disease associated with general malaise, loss of weight, and a low-grade temperature over a period of months or years is suggestive of some constitutional disturbance similar to that seen in acid-fast infections.

Characteristics. Heerfordt's original triad of low-grade fever, bilateral uveitis, and swelling of the parotids still comprises the essential characteristics of the syndrome, although associated disturbances, such as facial paralysis, enlargement of the preauricular glands, and enlargement of other salivary glands as well as that of the parotids, are of sufficiently frequent occurrence to make them of incidental diagnostic value.

The fever in our case was typical of other reported temperature records, lasting over a period of weeks, with an afternoon rise, averaging between 99° and 100°. Night sweats were apparently correlated complaints.

The bilateral uveitis in uveoparotid fever presents remarkably uniform findings, probably consistent with its chronicity. Despite the very slight gross reaction—our patient showed only slight circumcorneal injection—there is a goodly quantity of fibrinous exudate and consequent abundance of posterior synechiae. The posterior surface of the corneae show the lardaceous, nonspecific precipitates in pyramid formation. The anterior chamber has a few cells and the vitreous only fine opacities. Except for the above we see very little ophthalmoscopically; occasionally there is some papilledema.

Swelling of the parotid may be uni-

lateral although more frequently bilateral; it may or may not be associated with swelling of the other salivary glands. Swelling of the lacrimal glands has also been noted in a few cases. The parotid glands in uveoparotid fever as in Mikulicz's disease show lymphoid and endotheloid infiltration of the parenchyma, with giant cells interspersed. No tubercle bacilli have actually been found in such parotid glands although the lesions look like tuberculous reactions.

Facial paralyses of the peripheral type occur in approximately half of the cases—Merrill and Oaks[3] found it in twelve of their collected thirty cases. One's first impression would be that the mechanical enlargement of the gland itself might account for the paralysis. However, in our case the neurologists believed the facial palsy to be on a toxic basis and that it was less likely that the swollen gland could account for it. In another case the swelling of the parotid and the facial paralysis were found on contralateral sides while in several other cases the facial paralysis was noted to antedate the perceptible enlargement of the parotid by several weeks, casting doubt on their mutual interdependence. Heerfordt noted facial paralysis in his original case report and believed it was a toxic manifestation. In any case, the paralysis is usually temporary and in our case at least, it disappeared gradually with the diminution in size of the parotid gland.

The duration of the disease is variable in as much as its onset is insidious and its termination gradual. The shortest case reported lasted two months; our case has now gone on with signs of activity for six months, while that of Merrill and Oaks[3] lasted thirty-four months.

Definite evidence of old or recent tuberculosis is found in the majority of cases, usually of the lymphadenopathic type. Scrofula, which our patient showed, seems to be the most common type, although involvement of the tracheo-bronchial glands, as well as tuberculous infiltration of the lungs is frequently reported. A tuberculide, erythema nodosum, has been found so frequently that some believe it should be incorporated in the syndrome.

Sequelae. As previously mentioned, death has been reported in only four of the cases; in three from miliary tuberculosis, and in one, after recovery, pernicious anemia developed and the patient died in child-birth. Recovery of normal vision is almost the universal rule although several patients have developed secondary glaucoma, one optic atrophy, and one who had had a series of X-ray treatments developed cataracts.

Treatment. No specific remedy has been found and treatment consists of the usual therapeutic measures for uveitis and perhaps radiation to the parotid glands.

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MALIGNANT ANTHRAX EDEMA

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The patient had been working with Brazilian goat skins for the previous year, and appeared for treatment on the day after he had noticed a slight swelling of the right lower lid which had progressed without pain, involving both lids and the right side of the face. Hospitalization was immediately undertaken. The edema spread to the left eyelids but with less involvement than on the right. Recovery was complete following the administration of a total of 740 c.c. of anti-anthrax serum over a period of one week.

Anthrax is an acute infectious disease, caused by the Bacillus anthracis, occurring essentially in cattle, sheep, horses, and mice; carnivorous animals are less susceptible. In man it occurs in a cutaneous form as a malignant pustule and as anthrax edema, in a pulmonary form as wool-sorter's disease, and very rarely in an intestinal form.

The malignant pustule is the most usual form of anthrax. It is characterized by a lesion about one quarter of an inch in diameter, with a black center, surrounded by a ring of vesicles filled with clear or serous fluid and about this a pale indurated area. The other type of cutaneous infection, malignant edema without a pustule, is much more rare, and it is this type which will be considered in this communication.

Anthrax edema occurs not as a papulovesicular lesion, but as an intense edema. The patient is usually infected by rubbing his eyes or face with contaminated fingers. The inoculation period is about twelve hours.

Bacteriology: The anthrax bacillus is a rod-shaped, nonmotile organism, about 1/3000 of an inch in length. When growing in living animals it multiplies by fission and no spores are formed. If, however, the blood or any discharge from an infected animal is exposed to the air, small round spores of great vitality are formed in the bacilli. These spores may survive for several years and remain capable of reproducing the disease in favorable media. They resist antiseptics, but are killed by boiling fifteen to twenty minutes.

Clinical appearance: The most common site of infection is the eyelids, usually starting in the upper lid and spreading rapidly, due to the loose tissues, to the lower lid, the cheek, temporal region, and down the neck and chest. The buccal membranes and the tongue may also be involved, but the arms do not usually become affected. The chief characteristic of this edema is the absence of pain or suppuration. There is no primary pustule, although after the edema has been present for a few days the lids usually show some vesicular formations, due to tension, and these form large dark crusts, underneath which there is a serosanguineous fluid. Positive smears and cultures for Bacillus anthracis are usually obtained from this fluid. The crusts finally slough off and disfiguring scars may be left, which sometimes give rise to an ectropion.

Diagnosis: Erysipelas, orbital cellulitis, and vaccinia simulate this condition, but they can all be ruled out. In many cases the diagnosis is entirely missed because anthrax is not thought of as a causative factor. Of the various forms of anthrax, the malignant pustule is the most easily and most often diagnosed. In anthrax edema without a pustule, the characteristic features are the location, the lack of sharp delimitation of the edematous area from the surrounding skin or mucous membrane, the absence of pain and suppuration, and the knowledge of exposure to some source of infection, such as infected brushes or hides.

Treatment: The specific treatment of anthrax is the prompt administration of anti-anthrax serum. Early and adequate administration of this is the essence of successful treatment. The serum is given subcutaneously, intramuscularly, and intravenously, in doses of 30 to 100 c.c., and these are repeated as many times as indicated.

Report of a case

J. R., aged 38 years, on October 17, 1933, was referred to us by a local leath-

Fig. 1 (Ross and Shipman). Picture of the patient taken on October 17, 1933, when he was first seen by the authors and the day of his admission to the hospital.

Fig. 2 (Ross and Shipman). Picture taken on the following day (in the hospital) showing the extension of the edema over the right side of the face and head.

Fig. 3 (Ross and Shipman). Another view of the patient taken on the second day in hospital, showing the extension of the edema to the left side, involving the lids of the left eye.

Fig. 4 (Ross and Shipman). This picture was taken ten days later, on October 28, and shows the formation of black scabs over the right lids.

Fig. 5 (Ross and Shipman). Another view of the patient taken on October 28, showing the subsidence of the edema over the left eyelids, no scabs having formed.

Fig. 6 (Ross and Shipman). This picture of the patient was taken on January 6, 1934, after complete recovery. There are no disfiguring scars of the lids.

er factory, for treatment of the right eyelids. He gave the history of having worked with Brazilian goat skins for the previous eleven months. The day before we first saw the patient he had noticed a slight swelling of the right lower lid. This steadily increased, without any pain, and presented a most remarkable picture at the time of our first examination. There was an enormous amount of edema of both the upper and lower lids of the right eye, extending from just above the eyebrow, back to about one-and-one-half inches in front of the right ear, and down the whole right side of the face in a straight line to the submaxillary gland. The eyelids and the entire face on the right side over to the nose were involved (see fig. 1). There was no tenderness on pressure and no induration, but definite pitting without crackling. The upper and lower lids showed a redness which simulated that seen in orbital cellulitis, but the rest of the edema was pasty-white. The right palpebral fissure was completely closed; there was no secretion between the lids. The lids could be separated with considerable difficulty, but a very good view of the globe could be obtained. There was a slight amount of lacrimation, and some chemosis of the bulbar conjunctiva was seen on the temporal side. The ocular rotations were free in all directions and there was no proptosis. The cornea was clear. The pupil was normal in size and reacted well to light. Ophthalmoscopic examination revealed the media to be clear and the fundus showed no swelling of the disc nor engorgement of the veins. The left eye showed no external involvement, and ophthalmoscopic examination was negative for any pathology. In view of these findings and the history, a diagnosis of malignant anthrax edema was made, and the patient was immediately sent to the Camden Municipal Hospital, where drastic treatment was instituted. A total of 440 c.c. of anti-anthrax serum was given, the first 300 of which were given intravenously, starting the afternoon of October 17. The remaining amount was given intramuscularly in doses of 20 and 40 c.c. The final dose was given on October 24. Local treatment for the eyes consisted merely of hot compresses, with frequent instillations of liquid petrolatum, and the pupil was kept dilated with atropine.

The following notes indicate the progress and course of the disease.

October 18. The lids of the left eye showed some edema, and the edema over the right side of face and head was much more marked (see figs. 2 and 3).

October 19. The edema of the left lids was more marked but not so severe as on the right side. A slough was noticed on the buccal membrane on the right side, just above the lower molars. A smear from this was negative for Bacillus anthracis.

October 20. The swelling of the left eyelids showed definite signs of subsiding, with no scab formation. The lids of the right eye remained swollen, with large black scabs forming over the surface of each. The globe itself remained free from involvement.

October 21. A smear from the serum under the blebs on the right upper and lower lids was positive for Bacillus anthracis. The blood culture was negative.

October 23. The patient developed a severe serum rash, with a temperature of 102-8°, the highest he had during his illness.

October 24. The swelling on the right side began to subside.

October 26. A second smear from the fluid under the scabs was positive for Bacillus anthracis. The scabs at this time were black (see figs. 4 and 5). A second blood culture was negative.

November 2. The swelling over the right eye and face was definitely less and the scabs were healing. The lids could be opened voluntarily by the patient.

November 10. The patient was discharged from the hospital, after three successive negative smears from the fluid under the remaining scabs.

December 15, 1933. The patient went back to work with 6/6 vision in each eye, without any correction, and with

very little visible scar over the lids (see fig. 6).

Comment

This case has been reported because of its relatively rare occurrence, and the unusually good result obtained, due to an early diagnosis and prompt treatment.

CORNEAL CORPUSCLES IN THE REACTION OF HYPERSENSITIVENESS

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A brief review of the work of the more important observers on the participation of the corneal corpuscles in inflammatory processes is presented, including that of v. Szily in hypersensitiveness. As occurring in the hypersensitive cornea of rabbits and monkeys, the various stages from the corneal corpuscle to the macrophage cell are detailed. Lastly a brief description is given of the degeneration of the corneal macrophage. From the pathology laboratories of the Oscar Johnson Institute, Washington University School of Medicine. Conducted under a grant from the Commonwealth Fund of New York City.

For almost a hundred years, the cornea has been a favored tissue for the study of inflammatory reactions, not only by ophthalmologists but also by many general pathologists.

William Bowman[1], in 1847, was the first observer to describe the proliferation of the corpuscles, or fixed cells, of the cornea occurring in corneal injuries and irritations. His findings were confirmed by Strube in 1851, a pupil of Rudolph Virchow, and by Virchow[2] himself in 1852. Numerous other early writers dealt with the same subject. This was soon (in 1862) followed by the controversy over the presence and origin of the leucocytes or wandering cells of the cornea in cases of keratitis. No further mention of this spirited and prolonged dispute will be made in this paper. Now it is generally agreed that the polymorphonuclear neutrophilic leucocytes, ordinary pus cells or microphages, have all migrated from the capillaries and small veins of the corneal limbus. H. Walb[3], as early as 1875 employed vital staining with carmine (first employed by N. Lieberkühn[4] in 1873) to study the corneal corpuscles in rabbits after cauterization of the cornea with zinc chloride. Walb found that the corneal corpuscles stained red from the dissolved carmine, and that, while part of the corneal corpuscles at the cauterized spot were round in shape, others formed long spindle-shaped figures. Eberth[5] showed, in 1890, that in the corneal inflammation in birds, the proliferated corneal corpuscles in the vicinity of the cauterized area formed spindle-shaped cells which migrated to the cauterized focus. P. Goecke[6], in 1896, wrote that in the course of the first day after cauterization of the pigeon's cornea with lunar caustic, the corneal corpuscles formed long processes extending in the direction of the cauterized area. F. Marchand[7], who is unexcelled in his extensive knowledge of the modern histology of inflammation, wrote in 1924 that the fixed connective-tissue cells, including those of the cornea, became contractile and capable of moving around as the result of irritation from irritants of different kinds and in all inflammatory processes. Because they were contractile, they were able to take up foreign bodies of various kinds and thus performed as macrophages. Successive divisions of the corneal cells were able to form small round monuclear cells, of the nature of lymphocytes.

V. Szily[8], in 1914, reported that the "keratitis anaphylaktica" was characterized by infiltration with many polynuclear and mononuclear leucocytes, with eosinophilic cells and clasmatocytes; at times a pronounced proliferation of the corneal corpuscles was observed. Upon studying the cornea, one to several months after a persistent ana-

phylactic keratitis, he found that the clinically visible circular opacities corresponded to proliferative zones of the parenchymal cells of the cornea. Sometimes a necrotic anaphylactic keratitis developed where, in the midst of the diffusely infiltrated cornea, the necrotic lamellae stood out from their surroundings in the form of a disc, staining intensively red with eosin. More rarely, severe ulcerative processes occurred, which might increase to extensive necroses of tissue.

In a preceding paper by Dr. L. A. Julianelle and the writer[9], a general review of the clinical and histologic findings, including a tabulated summary of the pathologic changes in the eyes was presented. In the present study, however, consideration is given only to the part played by the corneal corpuscle in the reaction of hypersensitiveness.

The foci of necrosis in the midst of the cornea propria observed in the present study differ considerably from those described by v. Szily[8], in frequently showing empty spaces left by the necrosis and the latter occupied by dense numbers of histiocytes, large mononuclear cells, or macrophages. The terms histiocytes, large mononuclear cell, and macrophage are used as synonymous designations for the same cell. The function of this cell is obviously to act as a scavenger in the removal of detritus, left by the necrosis of the cornea propria.

Excellent discussions on the histiocyte or tissue macrophage in inflammatory processes are found in the exhaustive review of Felix Marchand[10] and in English in the recent work of Wm. Boyd[11].

What will be described at the present time is the continuity or sequence in the alteration of the corneal corpuscle to the adult macrophage cell as revealed in a study of the corneal reactions from hypersensitiveness. The staining is that by the routine hematoxylin-and-eosin method. Most of the foci showing necrosis in the midst of the cornea propria exhibit all stages of the change in the corneal corpuscle. Starting, then, with the normal, very thin, disc-shaped corneal corpuscle with its dark-staining, large, round, thin, and disc-shaped nucleus, it is first noted that the cell becomes larger, both in width and thickness; the cell outline becomes more clearly defined, and the nucleus thicker and more lightly stained, with its width greater in proportion to the width of the cell. Division of the en-

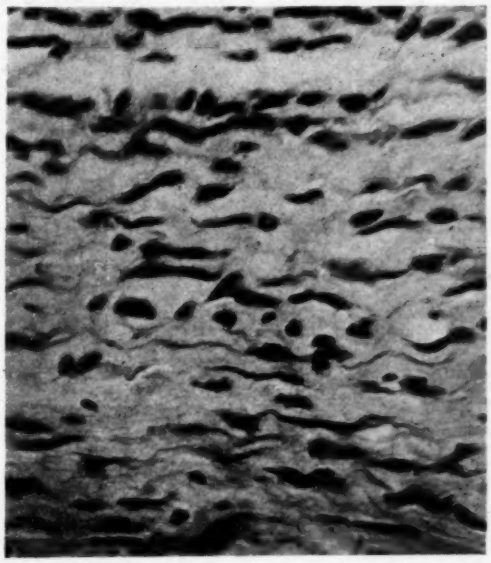

Fig. 1 (Lamb). Section through a rabbit's cornea at the periphery of a large focus of reaction to hypersensitiveness, showing proliferation of the corneal corpuscles and the formation of round macrophages.

larged corneal corpuscles is direct or amitotic. Mitotic figures were not observed although they were searched for under oil-immersion lens. This finding is contrary to that generally accepted for the cornea in the human subject, as reported by v. Hippel[12]. After the division of the corneal corpuscle, the two shortened and thick disc-shaped nuclei resulting become darker staining. Only a few progressive separations of descendant cells are sufficient to produce large, round or slightly oval cells with large, round, dark-staining nuclei which are accepted as adult corneal macrophages. After the first division of the corneal corpuscle, some of the daughter nuclei may become thin and ribbonlike, lose their regular relation to the ad-

jacent corneal lamellae, and take on bizarre shapes, as hooked, sickle formed, club shaped, and so forth. The changes in the arrangement and shape of the nuclei are undoubtedly the result of the pressure from movement of neighboring cells and lamellae of the cornea propria. These bizarre-shaped nuclei are only infrequently found where the lamellae of the cornea propria are in the process of liquefaction and, very rarely, where necrosis is complete. The division of these bizarre-shaped nuclei can be observed in a few instances.

In general, surrounding and in the periphery of each focus of reaction, simple proliferation of the corneal corpuscles is observed. Farther toward the center of each focus, where degeneration followed by liquefaction of the corneal lamellae is occurring, the prevailing cells are the large round macrophages. In this zone, however, the cells exhibit considerable degeneration and fragmentation of the nuclei. In the degenerating macrophage cells, the round nuclei become first very dark staining with hematoxylin followed later by an irregular staining, either in the form of a ring in the periphery of the nuclei or as irregular-shaped masses and granules. The similarity to the nuclei of pus cells is so great that the examination has to be made with oil-immersion lens. At the centers, where the necrotic corneal lamellae have disappeared, degeneration and fragmentation of the macrophage cells, which usually completely fill the empty space remaining, are advanced. Pus cells are generally present in a scanty, diffusely scattered arrangement.

The writer was unable to find in the literature reports of any reactions in human or animal corneae of changes so intensive as the present ones in the completeness of the necrosis and in the pronounced production of new-formed true corneal macrophages. The opportunity afforded here to study in numerous instances the formation from the corneal corpuscles of the corneal macrophage together with degenerative changes in the latter is unique. The above-mentioned work of v. Szily[8] is the only previous report on the anatomic changes in the cornea from hypersensitiveness.

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OCULAR PATHOLOGY OF THE NEWBORN

An End-Results Study

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This is an end-results study in a follow-up clinic of 17 out of 39 children, in whom retinal hemorrhages, extraocular and head injuries were found at birth, in a total of 400 observed during 1924-25 in the Robinson Memorial Maternity Hospital of the Massachusetts Memorial Hospitals, Boston. Yearly observations were made until quite accurate data concerning vision, extraocular-muscle function, ophthalmoscopic findings, and fields were obtained. All pathology cleared and it is concluded that no residual faults now exist which could be directly attributed to the trauma at birth. From the Dept. of Ophthalmology, Massachusetts Memorial Hospitals. Presented before the New England Ophthalmological Society, in Boston, on December 19, 1933.

In the November, 1927 number of the American Journal of Ophthalmology, the writer reported upon a study of 400 newborn infants in which tabulated data concerning mothers and infants were given in relation to eleven cases (2.75 percent) showing retinal hemorrhages and thirty-one* cases exhibiting extraocular and head lesions observed in the Robinson Memorial Maternity Hospital of the Massachusetts Memorial Hospitals during 1924-25.

"It was undertaken to seek an explanation for certain visual and muscle faults usually classified as congenital; to observe and record intraocular and certain extraocular conditions of interest to obstetricians; to compare data in this institution with those in the literature; and for the personal value of those making the study." A follow-up clinic was, therefore, inaugurated to ascertain the end results of observed pathology. The children were followed until, in most instances, quite accurate data could be obtained concerning visual acuity, field measurements, and ophthalmoscopic observations. Seventeen of the original thirty-nine pathologic cases at birth are herein reported upon, the observation covering a period varying from two to seven years.

Group 1. Retinal Hemorrhages

Case 52. November 16, 1924. Mother aged 38 years, parity 5, in labor 39 hours, generally contracted pelvis. Infant aged 30 hours, male, full term, weighed 7-14.5**, L.O.P. position, normal delivery; small hemorrhage right temporal retina.

October 20, 1931. Six observations, now in second grade, general health good; V.R. and L. = 20/30 and J. 1. Fields normal by confrontation and Haitz charts. Third-degree stereoscopic vision. No pathology seen with the ophthalmoscope.

Case 200. February 14, 1925. Mother aged 30 years, parity 3, in labor 5.5 hours, normal pelvis. Infant aged 3 hours, male, full term, weighed 6-12, R.O.A. position, normal delivery; multiple radial hemorrhages about discs.

October 10, 1929. Four observations, good health, no pathology seen in the fundi.

Case 204. April 2, 1925. Mother aged 28 years, parity 2, in labor 12 hours, normal pelvis. Infant aged 26 hours, female, full term, weighed 7-8, L.O.A. position, normal delivery; multiple radial hemorrhages right retina.

October 20, 1931. Two observations, now in first grade, good health; V.R. and L. = 20/20. Fields normal by confrontation and Haitz charts. Third-degree stereoscopic fusion. Fundi normal. Pupillary thread upper right pupil absorbed.

Case 205. April 2, 1925. Mother aged 33 years, parity 4, in labor 14 hours, normal pelvis. Infant aged 13 hours, male, full term, weighed 8-14, R.O.A. position, low forceps delivery; radial hemorrhages throughout right retina.

October 20, 1931. Five observations, now in first grade, good health. V.R. and L. = 20/30. Central fields normal

* Includes 3 cases of retinal hemorrhage.
** 7 lbs. 14.5 oz.

by Haitz charts. Third-degree fusion. Fundi clear.

Case 288. May 18, 1925. Mother aged 18 years, parity 2, in labor 10 hours, generally contracted pelvis. Infant aged 49 hours, female, full term, weighed 5-3, R.O.A. position, normal delivery; one large superficial hemorrhage left retina.

October 20, 1931. Six observations, now in first grade, good health. V.R. and L. = 20/20. Fields normal by confrontation and Haitz charts. Third-degree fusion. Fundi clear.

Case 317. July 24, 1925. Mother aged 28 years, parity 3, in labor 2.5 hours, generally contracted pelvis. Infant aged 20 hours, male, full term, weighed 9, R.O.A. position, normal delivery; multiple small superficial hemorrhages near right disc.

October 20, 1931. Four observations, now in second grade, good health. V.R. = 20/20 and J.1. V.L. = 20/30 and J.1. Fields normal by confrontation and Haitz charts. Third-degree fusion. Fundi clear.

Group 2. Facial Paralysis

Case 216. April 10, 1925. Mother aged 37 years, parity 1, in labor 15 hours, large flat pelvis. Infant aged 22 hours, male, full term, weighed 7-8.25, L.O.A. position, mid forceps delivery; left facial paralysis, frontal contusions, hazy discs.

October 20, 1931. Six observations, now in second grade, good health; V.R. and L. = 20/20 and J.1. Fields normal by confrontation and Haitz charts. Third-degree fusion. Fundi clear. Facial paralysis cleared rapidly while in hospital.

Case 222. April 13, 1925. Mother aged 32 years, parity 1, in labor 21.75 hours, normal pelvis. Infant 18 hours, male, full term, weighed 7-8, R.O.A. position, high forceps delivery; left facial paralysis lower branch, edema of right lids, hazy discs.

October 20, 1931. Six observations, in second grade, good health; V.R. and L. = 20/20 and J.1. Fields normal by confrontation and Haitz charts. Third-degree fusion. Fundi clear. Paralysis rapidly cleared while in hospital.

Case 311. July 27, 1925. Mother aged 20 years, parity 1, in labor 6 hours, normal pelvis. Infant aged 20 hours, female, full term, weighed 6-11.25, R.O.A. position, mid forceps delivery; left facial paralysis, contusions right frontal, slight disc haze.

November 6, 1930. Three observations, in first grade; third-degree fusion. Fundi clear. Paralysis rapidly cleared while in hospital.

Group 3. Other Head and Extraocular Lesions

Case 7. November 1, 1924. Mother aged 24 years, parity 4, in labor 20 hours, contracted pelvis. (Mother died of T.B. hip in 1926.) Infant aged 50 hours, female, premature, weighed 4.5, R.O.A. position, normal delivery; subconjunctival hemorrhage lower left, disc margins hazy.

October 20, 1931. Five observations, in second grade, health improved over one year by fresh air and cod liver oil. V.R. = 20/50; V.L. = 20/70. With glasses correcting oblique astigmatism, vision O.U. = 20/30 and J.1. Fields normal by confrontation and Haitz charts. Fusion poor because of exophoria. Fundi clear.

Case 19. November 5, 1924. Mother aged 32 years, parity 1, in labor 16 hours, flat pelvis. Infant aged 49.5 hours, male, full term, weighed 5-5, L. Brow A. position, high forceps delivery; distorted skull, fractured nose, contused cheeks, hazy discs.

November 4, 1930. Four observations, in first grade, good health. V.R. = 20/20 and J. 1; V.L. = 20/200 and J. 10 —left esohypertropia. Fundi clear. Head and nose normal.

Case 85. December 2, 1924. Mother aged 17 years, parity 1, in labor 10 hours, slightly contracted pelvis. Infant aged 17 hours, female, full term, weighed 6-6, L.O.A. position, low forceps delivery; forceps marks both cheeks.

November 3, 1926. One observation, good health, no remaining marks.

Case 181. February 3, 1925. Mother aged 26 years, parity 1, in labor 12 hours, slightly contracted pelvis. Infant aged 18 hours, male, weighed 8-2, L.O.A. position, normal delivery; molded head, discs slightly hazy.

October 10, 1929. Four observations, good health, fundi clear, head normal.

Case 252. May 1, 1925. Mother aged 22 years, parity 1, in labor 13 hours, normal pelvis. Infant aged 15 hours, male, weighed 5-12, R.O.A. position, normal delivery; molded head right parieto-occipital, hazy discs.

October 19, 1927. Two observations, head normal, eyes straight, fundi normal.

Case 338. September 8, 1925. Mother aged 21 years, parity 1, in labor 21 hours, slightly contracted pelvis. Infant aged 24 hours, female, weighed 6-14, L.O.P. position, high forceps delivery; forceps contusion to face, discs hazy.

October 20, 1931. Six observations, not in school, weak heart. V.R. and L. = 20/20. Fields normal by confrontation and Haitz charts. Fundi clear.

Case 357. September 21, 1925. Mother aged 31 years, parity 2, in labor 18.5 hours, contracted pelvis. Infant aged 24 hours, male, weighed 6-12, full term, R.O.A. position, high forceps delivery; contusions right cheek and lids, discs and retinae hazy.

October 19, 1927. One observation, child anemic, fundi clear.

Case 360. September 20, 1925. Mother aged 28 years, parity 2, in labor 6 hours, normal pelvis. Infant aged 24 hours, male, weighed 8-12, full term, R.O.P. position, low forceps delivery; contusions right frontal; moderate retinal haze.

November 6, 1930. Five observations, in first grade, good health. V.R. and L. = 20/20. Third-degree fusion; fundi clear.

Comment

The follow-up study was instituted early, the second year, which made for more definite social-service contact and kept the interest of the mothers. Likewise, the children were handled more easily because of the yearly contact and the elimination of strangeness to the observers. Thus, very early, quite satisfactory ophthalmoscopy was possible.

Group 1. This group analyzes the end results of six of the eleven original cases in which retinal hemorrhages were exhibited, all of which cleared early as would be expected, but left no visible mark detectable by direct ophthalmoscopy.

Visual acuity was normal as obtained in all but case 200, and further verified by the small color Haitz cards.

Group 2. This delineates the end results in three of the original eight facial-nerve paresis or paralysis cases. All these cleared by the time the child left the hospital at the end of the usual two-weeks period, and no residuals have been detected, nor any extraocular fault as sometimes shows in the external rectus when high forceps are applied over the mastoid and when traumatic edema extends to the sixth nerve as it crosses over the petrous ridge.

Group 3. Of the original twenty-three cases of head and extraocular injury eight are here analyzed in the follow-up study. These injuries range from subconjunctival hemorrhages to contusions of the face and molded heads of moderate and marked degree.

None of these lesions left any trace within a relatively short time and all children developed essentially normal eyes. In case 7 there was 20/50 and 20/70 vision brought to 20/30 and Jaeger 1 by glasses correcting oblique plus astigmatism. In case 19, the infant exhibited when two days old a distorted head, fractured nose, contused cheeks, and hazy discs, but ultimately showed vision of 20/20 and 20/200 with left esohypertropia, but normal fundi. This child was delivered by high forceps from a left-brow-anterior position in a primipara mother of 17 years. In cases 85, 181, 252, and 357 no record of vision was obtained because of the children's

youth, but the ophthalmoscope detected no pathology and vision seemed good.

Early Death

In case 62 death occurred when the infant was 3.5 days old from hemorrhagic disease of the newborn. There were convulsions, oscillating eyes, etc., probably from intracranial hemorrhage.

Conclusions

A follow-up study of 17 children out of 39 in whom intraocular, extraocular, and head injuries were found at birth in a study of 400 newborn, elicited no residual faults apparently directly attributable to the recorded injuries.

84 Commonwealth Avenue.

NOTES, CASES, INSTRUMENTS

A NOTE ON THE FREQUENCY OF INVOLVEMENT OF THE ANTERIOR AURICULAR LYMPH NODES IN TRACHOMA

SURGEON C. E. RICE
ACT. ASSISTANT SURGEON J. E. SMITH
ROLLA, MISSOURI

The anterior auricular lymph nodes receive part of the lymph drainage from the lateral three quarters of the palpebral conjunctiva*. These nodes are frequently involved and often break down in infections of the palpebral conjunctiva.

One hundred twelve consecutive trachoma cases showing active lid involvement and pannus formation were examined in the outpatient clinic of the Trachoma Hospital at Rolla, Mo., for involvement of these lymph nodes.

The involvement was classified as follows: If easily palpable they were recorded as slightly enlarged; if twice or more the size of glands in the first group they were recorded as considerably enlarged; while in group three were placed glands that showed not only considerable enlargement but also tenderness.

In group one, recorded as slightly enlarged, there were twenty-one cases in this series. One was a case of unilateral trachoma with the lymph nodes palpable only on the side of the trachomatous involvement.

In group two, recorded as considerably enlarged, there were nine cases. In this group were two cases of unilateral trachoma in which the lymph nodes were markedly enlarged only on the side of the trachomatous involvement. On the opposite side the nodes were not palpable. There were three cases in which much more trachomatous activity was apparent in one eye than in the other. In these three cases, while the nodes were easily palpable on the side of lesser involvement, the nodes were greatly enlarged only on the side showing the more active trachoma pathology.

In group three, showing much enlargement of the anterior auricular lymph nodes, together with tenderness, there were four cases. Of these four cases two were of unilateral trachoma with enlargement and tenderness of the lymph nodes on the side of the trachomatous eye, the nodes on the opposite side not being palpable. In one of these unilateral cases trachoma developed in the other eye while the patient was in the hospital, without, however, involving the lymph nodes on that side.

It is interesting to note that one of the patients in the last group had such acutely involved eyes with so much enlargement and tenderness of the anterior auricular lymph nodes that tularemia was considered. Agglutination tests were negative, however, and the patient responded to trachoma therapy. Culture on blood agar in this case showed growth of Staphylococcus aureus and Bact. xerosis only. Cultures on blood agar in two other cases of this latter group showed in one a pure culture of Staphylococcus aureus only and in the other Staphylococcus aureus and Bact. xerosis.

It is our experience that the anterior auricular lymph nodes are more apt to be found involved in trachoma if the examination is made during the first six months of the disease.

Summary

In a series of 112 consecutive cases of trachoma with lid activity, the anterior auricular lymph nodes were found involved in 27 percent.

United States Public Health Service.

* Morris's Human Anatomy. Ed. 5, p. 1078.

SARCOMA OF THE IRIS

H. A. PATTERSON, M.D.
FORT STANTON, N.M.

Chiefly because sarcoma of the iris is rare, this case is reported.

A. H., a white man aged 40 years, was

admitted to the U. S. Marine Hospital at Fort Stanton, New Mexico, August 27, 1928, for the treatment of pulmonary tuberculosis. He had consulted a physician in November, 1927, because of loss of voice and general weakness and was told that he had pulmonary tuberculosis with involvement of the larynx. These diagnoses were confirmed on admission to this hospital. During the past six years, under routine hospital care and heliotherapy, there had been a gradual improvement of both the pulmonary and laryngeal involvement until at present they are arrested.

The present eye condition had a gradual onset, being first noticed in the

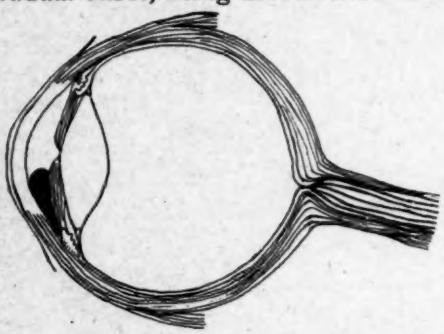

Fig. 1 (Patterson). Diagrammatic cross-section of entire eye.

summer of 1934. A small growth in the left eye caused no discomfort nor noticeable impairment of vision. On December 12, 1934, the patient came to the eye, ear, nose and throat department and reported the above-mentioned growth. He stated that there was no discomfort from the eye, but that the growth had increased in size during the past six months.

Examination showed a small brown mass extending from the lower border of the iris to the pupil and as thick as the anterior chamber. The eyeground examination was negative. No impairment of vision was noted.

On December 14, 1934, the patient was seen by the consultant in diseases of the eye, who recommended that a biopsy be made. Ten days later, an incision as for a posterior iridectomy was made and several pieces of the growth removed. Because of the friability of the tissue, it was impossible to determine whether or not all the growth had been removed. The section was sent to the laboratory for examination. The pathological report of December 31, 1934, was as follows: "Eye material poorly preserved but probably sarcomatous."

After the report of the pathologist was received, the consultant advised removal of the eye. This was done under general anesthesia, on January 5, 1935, and the eye was sent intact to the laboratory for examination. The pathological report (National Institute of Health Report No. S-3051) on January 21, 1935, was as follows:

"The lens and iris are displaced forward, practically obliterating the anterior chamber. The lens is softened. On one side the iris is much thickened and filled by a black tumor composed of concentric whorls of slender, usually pigmented fusiform cells with vesicular nuclei and prominent nucleoli. Interspersed with these whorls are nodules of larger, less pigmented polygonal cells with larger vesicular nuclei and more prominent nucleoli. Also there are small areas of elongate, apparently unipolar cells palisaded against small vessels.

"While the tumor is of the malignant mixed-cell type, its small size and lack of extension from the eyeball make for a relatively favorable prognosis."

The new growth, which proved to be a melanosarcoma of the iris, grew slowly during a period of over six months and did not cause any functional disturbance. Mayou[1] in 1930 reported a case of sarcoma of the iris which had been seen thirteen years before the eye was removed. He stated that there were about 100 cases of sarcoma of the iris on record at that time. Chance[2] reported a case of sarcoma of the iris which had been present for at least twenty-seven years before the eye was removed. A case of melanosarcoma of the iris was reported by Meyer[3]. Enucleation was refused and the tumor was removed by posterior iridectomy, this was followed by X-ray treatment. Later the whole anterior portion of the globe

became involved and enucleation was then permitted because of the severe pain.

In making a diagnosis, tuberculosis of the iris was considered, chiefly because the patient was being treated for pulmonary tuberculosis. The possibilities of such a diagnosis were considered remote. Tuberculosis of the iris is probably always secondary, while this growth seemed from the first to be primary.

Primary tumors of the iris are exceedingly rare. Stengel[4] states that melanosarcoma is the principal variety of tumors of the iris.

While melanosarcomas arising from other parts of the body are extremely malignant, those of the iris are not.

U. S. Marine Hospital.

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SOCIETY PROCEEDINGS

Edited by Dr. H. Rommel Hildreth

CHICAGO OPHTHALMOLOGICAL SOCIETY

December 17, 1934

Dr. E. V. L. Brown, president

Bilateral congenital ectopia lentis

Dr. W. F. Moncrieff said that in this patient, a girl 20 years of age, the right lens had a position upward and temporalward, the left lens directly upward. In the right eye, the zonular fibers crossing the pupillary zone were grouped into triangular bundles, with open spaces between, while in the left eye the fibers had a more uniform appearance. There was a well-marked iridodonesis in both eyes. The lower equator of each lens divided the pupil zone into two approximately equal parts in each eye; the upper portion was phakic and myopic, the lower portion aphakic and of course highly hyperopic. There was no other objective abnormality of either eye.

There were certain special features of the visual images connected with the correction of the refraction in each portion of the pupil, which seemed to be of unusual interest. The uncorrected vision of each eye was 0.1 and J 3 at six inches. The myopic (phakic) refraction and corrected vision of the upper part of each pupil, was: O.D. —5.50 D.sph. ⌯ —1.00 D. cyl. ax. 90°, vision 0.3; O.S. —5.00 D.sph. ⌯ —1.00 D. cyl. ax. 90°, vision 0.2. Near vision was J 2. With this correction there was good binocular vision and monocular diplopia or polyopia was not very marked.

The aphakic refraction and corrected vision of the lower part of each pupil was: O.D. +14.00 D.sph. ⌯ +2.00 D. cyl. ax. 75°, vision 0.6—3; O.S. +14.00 D.sph. ⌯ +1.00 D. cyl. ax. 100°, vision 0.4+2. With +2.50 D.sph. added for near, vision was J 1. With this correction there was binocular diplopia for distance and near. There was also monocular polyopia with either eye, for objects in the portions of the visual field corresponding to the pupillary portion of each lens equator, with either correction of the refraction, or without any.

In considering therapy, surgical questions arose. Optical iridectomy would obviously be of no advantage. Lens extraction seemed inadvisable because, besides the more than ordinary operative risk in such a condition, there was the fact that the present fairly useful uncorrected vision would be made worse, and the patient would be entirely dependent, especially for near vision, on glasses.

In correcting the refraction, it would seem advisable to order the myopic correction for general use, and further to use the aphakic correction of the right eye in the form of a bifocal as an accessory for use when maximum vision for either distance or near was necessary or desired.

Bilateral Kuhnt-Junius macular degeneration

Dr. F. M. Knierim said that this patient, a man 41 years of age, had a severe visual defect (V. = 3/200) of the right eye, of fourteen years' duration, and a less marked defect (V = 0.2—1) of the left eye, the duration of which was about one year. The patient had been under observation at varying intervals for a period of about eighteen months. When first examined, the right eye had an old, apparently nonactive macular lesion, slightly more than 1 p.d. in diameter, of yellowish color, flecked with irregular pigment deposits. There were a few other smaller old chorioretinitic lesions of similar appearance between the disc and macula. At this time there was an active macular lesion of the left eye, of similar size, grayish in color, with a yellowish tint in the upper portion and slightly elevated. The lesion was dotted with small hemorrhages, and adjoined above by a semicircular area of hemorrhage. A few punctate hemorrhages were

scattered between the disc and macula, and there was some edema of the nasal and superior margins of the disc. After three months, most of the hemorrhages had disappeared, and slight pigment proliferation had occurred. The central acuity (left eye) had also declined to 0.1. After six months, the central acuity had declined further to 6/200, and a fresh hemorrhage was noted in the macular area. About eighteen months after the first observations, some fresh punctate hemorrhages were found along the nasal border of the old macular lesion of the right eye, indicating activity of the pathologic process. Also, there was definite cystoid retinal degeneration of the lower half of the macular lesion of the left eye, giving a translucent and markedly elevated appearance. There were white fluffy lesions above the macula, and fatty retinitic lesions in a form suggestive of retinitis circinata; also a few hemorrhages along the larger vessels.

Examination of the central fields revealed an irregularly outlined ceco-central scotoma of each eye (for white 4/1000), the central portion of which averaged somewhat over ten degrees in diameter, being on the whole more extensive in the right eye than in the left. No defects were demonstrated in the peripheral fields. The internist's examination revealed some evidence of vasomotor instability, but nothing else of any probable significance.

The use of prostheses over unsightly eyes

Dr. C. O. Schneider read a paper on this subject which was published in this Journal (June, 1935).

Dacryostenosis in children

Dr. R. O. Riser read a paper on this subject which will be published in this Journal.

Discussion. Dr. R. C. Gamble said that many types of obstruction and infection of the lacrimal drainage apparatus were seen at Children's Memorial Hospital. Many patients got well in a few weeks without treatment; many were cured when pressure was made upon the lacrimal sac, combined with the instillation of a mild antiseptic. Some continued to discharge for months, but recovered very soon after one probing; in others, the probing failed to do any lasting good.

In probing, sometimes an obstruction was felt at the lower end of the sac and sometimes at the lower end of the naso-lacrimal duct. In some cases the probe could not be passed all the way into the inferior meatus. Some cases developed acute phlegmons repeatedly; others never had them. These differences in behavior had been well explained by Dr. Riser as being due to the difference in the pathologic anatomy of the congenital type compared to that found in the acquired type. He had never seen a corneal ulcer occur in a child with either the congenital or acquired type of dacryostenosis; rarely had he seen an acute phlegmon occur in a child with the congenital type, whereas it was very common in the acquired type. He did not recall seeing the congenital type of obstruction persist beyond the age of seven or eight years. Whatever infection took place in the lining of the sac in these cases was probably saprophytic in type, and resulted from bacteria carried in from the conjunctival sac where they were exposed to the action of lysozymes. The more virulent bacteria in the nose could not reach the sac, due to the obstruction. Acquired dacryostenosis in children was very similar to the same condition in adults as regards cause, treatment, and prognosis.

Since the congenital type was self-limited and quite harmless, one was perfectly justified in doing what many good pediatricians do, namely, to keep the eye clean and let nature take its course. However, it was kept cleaner and nature took its course more quickly if one-percent mercurochrome and pressure over the sac were used. Unquestionably, mercurochrome was effective in many of these cases. Argyrol might be equally effective, but it would cause argyrosis. Irrigation of the sac through the canaliculus was of some value, but was almost as formidable a procedure as probing and had to be done repeatedly. A lacrimal syringe was a more

clumsy instrument than a probe to use on a squirming infant. There was always danger of abrading the cornea, although possibly that would do little harm. The procedure of slitting the upper canaliculus and passing a large probe was effective, but a general anesthetic was required. The smaller probe was just as effective and could be used on infants one year of age or less, by restraining the child in a sheet and injecting a few drops of one-fourth percent cocaine and adrenalin into the sac, then washing it all out in a few seconds, so that very little was absorbed. The danger of making a false passage was very slight, because the pathway was normally large until the lower part of the naso-lacrimal duct was reached. By this time the probe was directed in the proper direction. Children older than one year were usually too muscular to be restrained properly and should have a general anesthetic.

Dr. R. H. Good expressed himself as much opposed to slitting the canaliculus since it never left an eye normal. A good-sized probe could be passed into the canaliculus without slitting. In young children all that was necessary to get an opening was to use a small probe and only a few probings should be made. If this failed it was not necessary to extirpate the sac. If one-third of the lacrimal ostium in the nose were removed, and the duct slit, it would be found that the tear sac would function very beautifully in these children without an extensive operation.

Prevention of blindness

Dr. Harry S. Gradle said that there were approximately 63,500 known blind residents of the United States. It was impossible to determine the cause in each case. In the census the figures were based upon inability to read even with glasses. According to the classification of the American Medical Association absolute blindness was inability to perceive light; economic blindness was inability to do any work, industrial or other, measured as less than 20/200 vision. Vocational blindness was inability to do work through which a living had previously been earned, and this depended upon the character of the work, and varied from 20/200 to 20/60. Educational blindness was based upon inability to learn by methods commonly used in school, and under this was defined visual acuity as required in sight-saving classes, etc.

The best source of information on the subject was Best's publication of 1934, which discussed conditions that might cause blindness, divided into local and general conditions. According to statistics, 54.4 percent of all blindness was caused by diseases of the eye, many of which causes, such as gonorrheal ophthalmia, were decreasing as a result of education and legislation. Trachoma in the United States was now fairly well controlled. In the "trachoma nests" all over the country, clinics had been established (four in Southern Illinois) and this disease should reach the vanishing point with this generation. Of corneal disease a large proportion was due to industrial accidents, which were preventable in most cases, and with safety measures and immediate medical attention this cause of blindness would be reduced. In nonindustrial life the diseases of the cornea were more often of the degenerative type, and the percentage was more difficult to eradicate. In diseases of the retina, iris, and choroid, not much was known about prevention, and the figure of 1.6 percent could not be reduced more than a fraction.

Glaucoma had a percentage of 5.4 percent, and in combating glaucoma the only measures we had were measures of education of the lay public and particularly the general practitioner. He should be taught to recognize glaucoma, for the sooner the patient got into the hands of a man equipped to take care of him, the better his chances of retaining vision. With acute fulminating glaucoma, because of intense pain the patient would seek an oculist immediately, but with the simple chronic glaucoma he was likely to delay until it was too late.

In diseases of the optic nerve, more than half were due to syphilis in one form or another. Today with early diagnosis of lues and thorough and

complete treatment, it was probable that the figure of 6.9 percent would be greatly reduced within the next decade. The figure for diseases of the lens, 13.7 percent, was extremely difficult to break down into component parts. However, it was fair to assume that operative treatment would reduce the blindness due to cataract of various types. Blindness might also be reduced in a rather indefinite group caused by such diseases as scarlet fever, measles, etc., which, as these diseases were brought under control, would show a decreased figure.

Accidents caused 16.5 percent of blindness. Here again the factor of safety devices and education would do much to reduce the figures, though the element of human carelessness would always remain.

Probably 59.7 percent of all blindness today was preventable. More than 38,000 people were unnecessarily blind. There was an ever-increasing movement toward the eradication of blindness, and it was probable that all the percentages and statistics given would be substantially reduced in the next decade.

Robert von der Heydt

WASHINGTON, D.C., OPHTHALMOLOGICAL SOCIETY

January 3, 1935

Dr. William T. Davis, president

Sympathetic ophthalmia with recovery

Dr. Carl Henning said that on January 31, 1933, Mr. G., white, aged 39 years, came to him stating that a week before that date he had hit his left eye against the top of a chair. The eye was cataractous and he had never seen well with it.

A hernia of the iris at about "2 o'clock" was seen but was let alone. The eye healed uneventfully. The right eye was normal. On April 1 he had an acute attack of iritis in the left eye which improved promptly but was never entirely well. On May 1, after an absence of one week from Dr. Henning's office, he reported with an acute iritis of the right eye of ten hours' duration. After consultation with Dr. Greene the left eye was removed that day and sent to the Army Medical Museum for section.

The right eye developed a typical anterior form of sympathetic iridocyclitis. Intradermal test by retinal pigment, made by Dr. Selinger, was negative. Typhoid vaccine was given intravenously by Dr. Selinger, with some chill and rise of temperature. Atropine and hot compresses were given as well as sodium salicylate and sodium bicarbonate. The condition slowly improved.

Atropine was discontinued in December and the sodium salicylate reduced to 60 grs. a day; further reduction of the sodium salicylate at that time caused a headache. The eye seemed to have recovered. Vision in December, 1933, was 20/30; on July 4, 1934, it was 20/20. The eye was sensitive a long time and accommodation was slow in returning.

The report from the Army Medical Museum of the enucleated left eye was sympathogenic uveitis.

Discussion. Dr. Benjamin Rones spoke of the recently published article by Dr. Friedenwald concerning the theory of allergy in sympathetic ophthalmia when there was disturbance of pigment. In two cases of sympathetic ophthalmia that were given ultraviolet-light therapy in graded doses a cure was established.

Recurrent monocular glaucoma

Dr. Benjamin Rones reported the case of a 28-year-old man who first began to have attacks of increased intraocular tension in the right eye at 14 years of age. Since then the attacks had recurred yearly in the right eye. At 15 years of age he had an attack in the left eye, followed shortly by the development of considerable myopia. Since then there had been no recurrences in the left eye.

On examination the discs showed no pathological excavation. The visual fields and blind spots were normal. Corrected vision in each eye was 20/15, with a myopic lens. Over a period of

two years the tension in the right eye was elevated several times but responded quickly to pilocarpine. On one occasion numerous deposits were found on the posterior corneal surface of the right eye and these disappeared after the tension had returned to normal.

Dr. Rones discussed the mechanism by which the increased tension was reflected to the anterior ocular segments, causing the development of myopia, but sparing the optic nerve. He also mentioned the theories which accounted for the development of glaucoma by the increased albuminoids resulting from low-grade uveitis blocking the filtration angles.

Discussion. Dr. William T. Davis brought up the question as to whether attacks of glaucoma in eyes otherwise perfectly normal were really cases of glaucoma simplex or whether they were cases of uveitis with increased tension.

Dr. Rones said that in the case he had just reported the aqueous beam was not increased, and even though precipitates were present he could not convince himself that this was typical uveitis.

James M. Greear,
Secretary.

MEMPHIS SOCIETY OF OPHTHALMOLOGY AND OTOLARYNGOLOGY

January 8, 1935

Dr. M. G. Seligstein presiding

Retinal detachment, cured by operation

Dr. Phil M. Lewis presented R. C., a white man, aged 25 years, on whom he had operated for a detachment of the retina. The patient was first seen on June 30, 1934. Three months previously while boxing, the right eye had been injured, and the lower jaw on that side broken. An osteomyelitis of the jaw developed. After prolonged hospitalization and numerous operations the jaw finally healed. Meanwhile vision in the eye gradually became worse.

On examination, the anterior portion of the eye was found to be normal. The vitreous was so filled with opacities that the fundus was seen very indistinctly, but it was possible to recognize a retinal detachment in the upper temporal quadrant. Vision was reduced to light perception. Potassium iodide and rest were ordered. When seen six weeks later, the vitreous had cleared a little, and vision had increased to fingers at three feet. On September 22, the vitreous had cleared sufficiently to allow inspection of the fundus quite well. The detachment was flat near the macula, but much more prominent near the periphery. Near the ora serrata several tears could be seen.

Operation by the Walker method was performed on September 27, 1934, the detachment then being six months old. Twenty-three micropins were used, covering practically the entire detached area, especially near the ora serrata. Due to economic reasons the patient was kept in the hospital only ten days. He was sent home by ambulance and kept in bed about three weeks longer.

Complete reattachment resulted. Numerous scars similar to those of an old chorioretinitis were present. Vision improved to 20/50–2. The field was full, but there were numerous scotomata.

Pterygium cyst

Dr. A. C. Lewis reported on Mr. T. T. C., a farmer aged 29 years, who was seen January 3, 1935, because of a growth on his right eye which seemed to be increasing in size. This growth had been there as long as he could remember. A few years ago while cutting wood a chip had struck this eye and ruptured the growth; it was very small after this happened for several weeks, but gradually again increased in size.

An ordinary, thick, vascular pterygium was seen stretched across a mass the size of a very large pea over which it was difficult to close the lids. A horizontal incision was made across the summit and about 1 c.c. of clear, thin fluid evacuated. The pterygium was then disposed of by the McReynold's technic. The floor of the cyst was mostly over the sclera. It was clean, free from adhesions and fibrous attachments, and extended slightly over the limbus, while the thick fibrous tendon

of the pterygium extended 7 mm. beyond the limbus.

Pterygium cyst is comparatively rare, but probably no more unusual than was the occurrence of pterygium in a young child. According to the patient, the growth had changed little in the past twenty-five years.

Ralph O. Rychener,
Secretary.

ROYAL SOCIETY OF MEDICINE, LONDON

Section of Ophthalmology

January 11, 1935

Mr. Ransom Pickard, president

Corneal graft

Mr. B. W. Rycroft showed a case of corneal grafting in a woman aged 48 years, who had been under treatment for many years at the Royal Eye Hospital. The story was a common one, of deep interstitial keratitis with uveitis. The final condition was one of opaque cornea with fixed iris. Last June there was no perception of hand movements, but accurate projection was present, though the pupil could not be seen. In December a 4-mm. corneal graft was implanted. On the third day the graft was completely opaque, looking like soft blotting paper. At the end of a week it was clear, the stitch had cut out, and the conjunctiva had begun to slide back. Mr. Tudor Thomas kindly saw the patient a week ago; vision was then 6/36, with telescopic spectacles, 6/24, and J4 for reading.

Discussion. Mr. Tudor Thomas said there was a very clear shiny surface, and the vision was very gratifying. Mr. Rycroft had mentioned the difficulty in deciding the position of the pupil. This could be judged by transillumination if one used two transilluminators, and by observing the lighted patch on the cornea one could tell where the depth of the anterior chamber was, and could arrange the graft to coincide. In dealing with a small pupil, particularly with a small fixed pupil, it was very important to have the graft immediately in front of it.

Choroidal sclerosis

Mr. Arnold Sorsby said that it seemed clear that three fairly distinct types of choroidal sclerosis could be recognized. They are: 1, The type described by Edward Nettleship as central senile areolar choroidal atrophy. In this type the lesion takes the form of an oval area which extends from the disc temporally engulfing the macula. It is bilateral, and a varying degree of atrophy of the choriocapillaris, with conversion of the larger vessels into white lines, is present. 2, The second type of the condition is the massive peripapillary form. In this type a coronary area of sclerosis radiates from the disc. 3. The third type is a generalized choroidal sclerosis. In this kind it is not unusual to find a localized area more heavily involved than the rest of the fundus.

Among the possible causes for the condition which had been advanced were a senile change, and syphilis. With regard to the question of age, most of the cases which had been recorded were, it was true, in old people, but to speak of the conditions as senile was only to attach to them a label. As to the question of syphilis being a possible cause, the literature contained only three cases in which there was any suggestion of syphilis. With regard to retinitis pigmentosa, in the type described by Nettleship this did not enter into consideration, though in the generalized form it was possible to say with reason that the cases might be atypical retinitis pigmentosa. A familial factor had been suggested, but not proved, by the cases of Cuperus (for the peripapillary type), Guglianetti, and of Wilmer (for the generalized type).

There was also the question of an association with cardiovascular disorders. None of the cases recorded in the literature showed evidence of cardiovascular involvement, except the two shown before this meeting: one with Paget's disease and extensive cardiovascular degeneration, the other showing myocardial degeneration.

Discussion. Mr. Ransom Pickard said he was not so entirely convinced as Mr. Sorsby appeared to be that there

was really the distinction he stated between some cases of retinitis pigmentosa and those now described. He remembered many cases of retinitis pigmentosa which, in the final stage, showed sclerosis of the choroid, but did not show it in the early stages. On the other hand, he had seen advanced cases with much apparent sclerosis of choroid, but in which the pigment was so typical that one could not refuse to believe that there was at least an element of retinitis pigmentosa in it. He asked whether anything had been done on the question of the visual fields in the more limited cases.

Mr. Sorsby in reply said the question of retinitis pigmentosa was a difficult one, and the subject was too large to be properly dealt with in an incidental discussion. With regard to the fields, all the patients with generalized choroidal sclerosis had also a reduction of vision to such a degree that they had no more than perception of light, or, at most, ability to see hand movements. For that reason there had been, in them, no question of taking the visual fields. It was to be hoped that earlier cases would be met with, so that they could be studied. Possibly in that way the question would be solved. Solution was more likely by study of the genetic type of complication. The restricted fields might be due to a dying process, or because the underlying circulation was not satisfactory. He did not think perimetric differences would help to establish that. The question of the obliteration of the choriocapillaris raised another difficult problem; namely, as to what happened when one saw, clinically, the disappearance of the choriocapillaris and the choroidal vessels. Sometimes it was possible to see sclerosis affecting the small vessels, and the network of vessels standing out well; in another case there was no evidence of choriocapillaris, but there was sclerosis and an obliteration of large vessels. Whether the choriocapillaris died first, and, as a result, the overlying retinal pigment died and the choroidal circulation became visible, he did not know. It was also difficult to say whether the primary change was a closing down of the network of vessels no longer needed.

(Reported by H. Dickinson.)

ST. LOUIS OPHTHALMIC SOCIETY

January 25, 1935

Dr. Meyer Wiener, president

The lysozyme content of tears

Dr. William M. James read a paper on this subject which will be published in this Journal.

Discussion. Dr. Harvey J. Howard said that he had seen a great many cases of keratomalacia while in China. He had concluded that this condition was not primary, the belief being substantiated by Dr. James's work.

Dr. H. Rommel Hildreth said that in the literature on ultraviolet therapy one often encountered the statement that general body radiation would increase the nonspecific bacteriocidal power of the blood. He wondered whether the nonspecific bacteriocidal power might not be the lysozyme effect of the blood. He suggested testing the lysozyme content of tears after body irradiation with ultraviolet.

Dr. Roy E. Mason asked to hear about the experience others had had in the removal of the lacrimal gland. Did removal of the gland alter the resistance of the eye to disease?

Dr. James, in closing, stated that the work on keratomalacia was done by Dr. Finley, with rabbits. The results were striking.

He said that a high-vitamine diet was known to increase the lysozyme content of tears.

He did not know what the effect would be after removal of the lacrimal gland.

A method of deepening the anterior chamber in glaucoma and cataract operations

Dr. Harvey J. Howard read a paper on this subject which was published in this Journal (May, 1935).

Discussion. Dr. John Green said that

he felt that Elschnig's method of opening a shallow anterior chamber by dissecting with a scalpel was not used often enough.

Dr. H. Rommel Hildreth wondered if Dr. Howard had had the opportunity to measure the intraocular tension after making the injection.

Dr. Howard, in closing, stated that the puncture was made with the point of the knife first simply because the needle would not penetrate easily otherwise. If the opening was made behind the limbus the conjunctiva would prevent the fluid from escaping. Three to six drops of saline was the amount necessary to inject. He had not made determinations of the intraocular pressure following injection. Of course the operation proper was carried out immediately. It was possible to deepen the chamber one-half to one millimeter.

H. Rommel Hildreth,
Editor.

BALTIMORE CITY MEDICAL SOCIETY

Section on Ophthalmology

January 24, 1935

Dr. Lloyd B. Whitman, chairman

The iris-inclusion operation for glaucoma with especial reference to iridotasis

Dr. Clyde A. Clapp outlined the various inclusion operations since Critchett (1857) and then described the operation as he performed it: The operator begins by first grasping the conjunctiva at each side of the superior rectus by two separate fixation forceps, one arm of the forceps being applied near the limbus and the other at a point 10 to 12 mm. above. When the forceps are closed, the conjunctiva is wrinkled just above the limbus. The spade knife is inserted 5 to 6 mm. behind the limbus, carried under the conjunctiva to the limbus and into the angle of the anterior chamber, its point directed to one side so as not to touch the lens.

When the anterior chamber is very narrow, the incision is made with a Graefe knife leaving a long conjunctival flap or bridge. The iris is grasped close to the pupillary margin, drawn through the incision, and inverted so that the pigmented layer can be seen through the conjunctiva. In some cases, in which the iris prolapsed under the conjunctiva spontaneously and was not completely inverted, the operation is done in two stages, because in some of these cases the tension will rise later. At the second stage, the conjunctiva is dissected back over the iris almost to the limbus and the apex of the prolapse excised. Daily dressing, massage of the eye, and atropine were the important measures in the postoperative care.

The advantages of the operation, he said, were its simplicity, resulting in a minimum postoperative reaction; its adaptability to all types of glaucoma; and the infrequency of the later development of cataract. The disadvantages were the occasional development of a high degree of astigmatism, and, rarely, disfigurement by a cystoid scar.

Dr. Clapp reported on forty-six cases of glaucoma, in which he performed an iris-inclusion operation. Twenty-three were cases of simple glaucoma, in all of which tension was relieved and the vision retained; seven of acute glaucoma with good results; seven of secondary glaucoma, in four of which there was relief and in three a subsequent elevation of tension; four of hemorrhagic glaucoma with 100 per cent good results; two were cases of exfoliative capsular glaucoma, all satisfactory; and three buphthalmic eyes, two occurring in the same patient, in whom one eye was quite soft and the cornea clear, while the other had a cloudy cornea; the third eye maintained a satisfactory tension.

Symptomatic epilepsy due to visual stimulation

Dr. Robert Goodkind reported some observations made upon a 24-year-old woman who, with a preceding epileptic history, had had encephalitis at the age of 13 years. Following the latter she showed a new sensorimotor instability, characterized by regular and prompt uncontrolled and disorderly myoclonic

activity and, at times, typical grand-mal convulsions when her eyes were exposed to sunlight. They occurred with exposure to the sun, either direct or with ordinary window glass interposed, and to brief passage of a small beam from a carbon arc lamp. Ordinary electric light and ultraviolet light did not induce such responses. Usually on bright days she tried to shield her eyes, remaining indoors, complained of some photophobia, and showed increase in the isolated spasmodic jactitations which punctuated ordinary movements and speech. She was quite deteriorated mentally, and showed no emotional response to experimental tests.

Neurologically she presented considerable muscular rigidity of the cog-wheel type, and a suggestively Parkinsonian picture. Several tests failed to reveal porphyrins in the urine, and exposure of her body to the sun, with eyes covered, was without reaction. Blood-calcium, phosphorus, and sugar-tolerance curves were found to be normal. Subcutaneous hyoscine or adrenalin failed to alter her response to sunlight.

Disturbances of the eye due to diet

Dr. E. V. McCollum reviewed the facts already published on the subject.

Mary L. Small,
Secretary.

AMERICAN JOURNAL OF OPHTHALMOLOGY

PUBLISHED MONTHLY BY THE OPHTHALMIC PUBLISHING COMPANY

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* Deceased.

CRYOCAUTERY* FOR RETINAL DETACHMENT

It is now generally recognized that the essential accomplishment for surgical correction of retinal detachment is production of an adhesion or adhesions between choroid and retina, in order to prevent communication between the vitreous and the subretinal space.

This result may be obtained by simple closure of a retinal tear, or it may depend upon a delimiting barrage between choroid and retina. Although Gonin has advocated and still uses scleral puncture followed by application of the Paquelin cautery, other surgeons have secured comparable results with diathermy or with chemical cauterization.

Even Sourdille, the French surgeon who persists in disputing the etiologic importance of the tear, agrees that it is superlatively necessary to cause an adhesive reaction between retina and choroid in the zone of greatest retinal disturbance.

A recent report from the eye department of the Presbyterian Hospital in New York (John H. Dunnington and John P. Macnie, Transactions American Academy of Ophthalmology and Otolaryngology, 1934, page 133) credits the chemical cautery method of Guist and Lindner with as many successful results as were obtained by Walker's modification of the penetrating type of diathermy operation. Vogt has broadcast successes obtained with simple electrolysis through the sclera; Rubbrecht has employed jequirity; and Strampelli introduced blood plasma into the subretinal space. But in every method adhesive reaction to wall off the diseased area is the structural objective, and the question for each surgeon to determine is how he can most safely and readily achieve this purpose.

The convenience afforded by carbon-dioxide snow for cauterization in effective and easily controllable dosage is more or less familiar to the general sur-

* "Cryocautery" is a convenient word for "cold cautery," or cauterization with carbon-dioxide snow.

geon; and this substance has been applied to one or two purposes in ocular surgery (nevus, trachoma). Not long ago Deutschmann reported successful use of carbon-dioxide snow in a case of retinal detachment (Klinische Monatsblätter für Augenheilkunde, 1933, volume 91, page 450).

From the eye clinic of the University of Naples, Bietti (Bollettino d'Oculistica, 1934, page 576) reports on a series of experiments in rabbits, and fourteen clinical experiences in human subjects, in which carbon-dioxide snow was utilized in a special apparatus for (as regards the animal experimentation) simple production of retinochoroidal adhesions or (as regards the human subject) the cure of retinal detachment.

The special apparatus to which the term "cryocautery" is applied consists of a metal syringe in which is assembled a refrigerating mixture of carbon-dioxide snow and acetone. A temperature of eighty degrees centigrade below zero (102 degrees below zero Fahrenheit) is obtained.

The metal cylinder of the syringe is covered with an insulating fiber tube. At the proximal extremity of the syringe is a metal cover with a central opening for loading the syringe and small holes for decompression. These openings can be closed with an obturator. To the distal end of the syringe may be attached any one of several hollow tips especially designed for convenience in application of the cautery. The tip usually employed by Bietti is curved at the extremity and has a slightly oval cross section with a terminal diameter of two by three millimeters.

Through a funnel-shaped attachment at its proximal end, the syringe is charged with five or six jets of gas from a carbonic-acid-gas cylinder. Acetone to the amount of three cubic centimeters is allowed to fall drop by drop into the tube, and after closing the obturator, the mixture is well shaken with its tip downward, just as one shakes down a clinical thermometer after use. The apparatus is now ready for use for a period of about five minutes, its proper functioning being demonstrated by formation of a white veil of condensed vapor on the tip.

In the animal experiments, Bietti exposed the sclera and applied the cryocautery at one or more points for an interval of from five to thirty seconds. The fifteen rabbits used all showed the same ophthalmoscopic changes. Immediately after the episcleral application there was a grayish clouding of the retina, and in a few hours this was followed by a well-marked elevation of the retina, sharply circumscribed, and exactly repeating the round shape of the cauterized spot. Even with the most intense dosage used, Bietti never experienced necrosis of the sclera. Within four or five days the retina began to reapply itself, and reattachment was gradually followed by visibility of the choroidal pattern and pigmentary proliferation. These changes progressed for about one month. In the enucleated rabbit eye at various stages of postoperative development, the essential feature was a firm chorioretinal adhesion.

Of importance is a consideration of the general reduction in temperature of the eyeball, especially in the vicinity of the lens, and Bietti studied this question by means of the thermoelectric needle. The reduction of temperature did not exceed twenty-four degrees Fahrenheit, and even unusually prolonged experimental applications never gave rise to lens opacities.

In the fourteen clinical cases of retinal detachment which Bietti recites, the preliminary steps were along the usual lines, except that it was commonly found sufficient to draw a muscle to one side with a strabismus hook rather than to resect it. The objective was either to close the tear by direct action, to wall off the tear, or to create zones of adhesion in the region of the detachment; walling off being most frequently resorted to.

The surface of the sclera must be kept dry. The conjunctiva, the skin, and the ocular muscles may be protected with cotton or gauze. In using the cryocautery enough pressure is exerted upon the globe to flatten it at the point of application. The ordinary length of application was thirty sec-

onds, a shorter application being used in case of shallow detachment. The usual opening in the sclera for drainage of subretinal fluid is made after the desired number of applications of the cryocautery. The eye is left uncovered after the twentieth day and the patient is required to wear stenopeic spectacles for another month or so.

Complete reattachment was obtained in ten out of the fourteen cases, and the cure was apparently permanent in seven cases, with final vision varying from one-eighth to one-third.

Bietti recommends cryotherapy for simplicity of application, inexpensiveness of apparatus, fairly constant dosage, freedom from unnecessary damage to ocular tissues, ease of repetition, the large number of applications possible within a limited zone (especially as applied to multiple tears or absence of recognizable tear), and the relative safety of its use in the region of the ora serrata.

Although much time may elapse before a final verdict is possible as to choice of method in the surgery of retinal detachment, it would be well for every worthy proposal to receive ample publicity and careful trial. Bietti's technique has been subjected to deliberate animal experimentation and histologic study, and has given encouraging results in a group of clinical cases. It appears entitled to discussion and use among American ophthalmologists.

W. H. Crisp.

MEDICAL CASE HISTORIES

Two different things are called medical history. One is the history of the development and important events of medical science and art. This is recorded in books and made the object of research and the purpose of certain clubs, or medical societies. The other is the account a patient can give of previous attacks of disease, in himself or his relatives, when a doctor questions him in order to get all the light he can on the origin or significance of symptoms for which he is consulted. The history of medical science and art has a place in medical books and libraries. The medical history of the individual patient is to be elicited by the questioning of the physician, and applied in getting an understanding of and in dealing with the immediate needs of the particular patient.

This latter kind of medical history is of great practical and increasing value. The other might be called academic, the latter is personal. The history of the growth of medicine and surgery through the ages is of value, and should be known to every member of our profession. But contemporary, case-history medicine is for immediate application, and is essential to all therapeutics of medicine or surgery. One comes to us from the past, the other is for the present and future. It belongs with the understanding of new observations, researches, discoveries, methods, or operations that are crowding upon the minds of each worker in our profession today.

Case histories are not new in medicine. Hippocrates had them to study at the Asclepion of Cos. But in every new generation, with every new discovery, they must be reconsidered as to value and significance. They must be remodeled and supplemented by inquiries suggested by the larger knowledge. More and more a case history ceases to be the filling out of a stereotyped form, and becomes an original investigation into the natural history, the etiology of disease. Pathology is the physiology of disease, and every new fact of normal physiology becomes a starting point for new investigation into the varying manifestations of disease.

As our knowledge of recognized types of disease becomes more complete, the varying influences of heredity, congenital and family characteristics, and individual idiosyncrasy become more interesting and important. Every new individual is a new creation, different in some respect from any other. But he will hold his individual characteristics throughout life, and the symptoms he has manifested at one time will throw light on the evidences of disease that are encountered later. To have a knowledge of the peculiari-

ties that he has manifested in the past will help his physician to understand the symptoms for which he now seeks advice and assistance. The success, or failure, of measures to give relief in previous trials will suggest what should be done in the present emergency. Our knowledge of pathology and therapeutics in general fails to meet exactly the needs of any new case. The medical history of that particular patient would often supply the facts needed for relief of his particular trouble.

The old family doctor who had been called in for all previous ailments, who knew how the same attack ran its course in older members of the family, who had observed the particular weakness or danger shown in previous disease of this patient had a resource quite as valuable as the most modern laboratory facilities, a knowledge of endocrines, or the latest new drug. As the family doctor who has been the repository of this kind of medical history passes out of the picture, it becomes important that many things he knew should be preserved for the future benefit of the patient or his family. Even in large cities, the family doctor may still exist, but the number of patients who keep their old-time normal dependence on him decreases. They move to other places, or are drawn to others by reputation for special skill, or by some emergency.

The most practical way to gather and complete a personal medical history is by placing its important features in the memory of the patient, or of the mother, if it is a child. For most patients the points that can be impressed are few, and of personal importance; the outstanding peculiarities that should be brought to the attention of any physician whom he may consult later. If he has a disease that may stay with him through life, as syphilis, tuberculosis, renal inadequacy, or cardiac defect, he should be frankly and distinctly warned of it. Any special drug action or allergy he may have manifested should be mentioned. Any particular condition that has been found to disorder digestion, or metabolism, should be called to his attention, along with the importance of telling about these things to any other physician he may consult.

To have each patient come to us with a full personal, medical history of this kind would add greatly to our ability to help, and would make the practice of medicine, or surgery, far more satisfactory. Education is a slow process, and, in this case, both the profession and the public must be educated. But the resumption of the doctor's function as teacher will contribute to his own professional success and satisfaction, will gain the respect of patient and fellow physicians who may be consulted, and is a most important contribution to the future efficiency and honor of our profession.

Edward Jackson.

MEDICAL MEETINGS

This is being written on the return journey from the last of four medical-society gatherings attended in the past four weeks. It seems a good opportunity for considering medical meetings in general and being constructively critical. If one were to proportion correctly the praise and the criticism, the former would occupy three parts and the latter only one, but the good features are so obvious and need no eulogy, while the defects, though perhaps just as apparent, do need elaboration and a longer paragraph of possible suggestions.

Among the best elements of these annual meetings are the renewal of old friendships and the making of new friends who may soon fall into the former delightful category and become part of the best things of life.

The transaction of certain business of so-called "organized medicine" is a worthy and essential part of the meeting. Doctors everywhere are beginning to realize the necessity of concerted effort if they are to remain captains of their fate. No one can replace the physician, but if he lets laymen control him he will soon find his profession no longer a desirable one. His only salvation rests in organized action.

The first meeting of those recently

attended was that of the Texas State Medical Association in Dallas. This was an example of the highest type of state gatherings. There were more than fourteen hundred registrants, all seemingly enthusiastic. The eye, ear, nose, and throat section held three half-day sessions with an average attendance above one hundred. The papers were good and were received with interest and discussed broadly. The usual twenty minutes was allowed for the paper, followed by ten minutes for opening discussion and five for other discussions.

The next was the meeting of the American Ophthalmological Society; three more half days of twenty-minute papers and five-minute discussions. Then a break—the Association for Research in Ophthalmology—and then three more half days of twenty-minute papers and ten- and five-minute discussions at the section meeting of the American Medical Association.

My thesis is to point out the inadequacy of this twenty-ten-and-five-minute combination and to suggest a remedy.

It is a fair assumption that ninety percent of the doctors who attend any convention do so primarily to learn; therefore it is this ninety percent that must be considered.

The twenty-ten-and-five-minute method almost precludes the possibility of realizing the doctor's hope. What does he get? A half-dozen case reports —without the "case"—a few therapeutic suggestions, and three or four additional developments of old ideas without adequate presentation of the fundamental proposition because of time limitation. Discussions are prepared in advance for publication—mostly flattering, guarded, and formal—in brief, almost useless.

The American Academy of Ophthalogy and Otolaryngology recognized this and developed the idea of graduate courses—the Academy's most vital contribution to medicine and by far its most popular feature. That lusty infant, the Association for Research in Ophthalmology also saw the light and offers something thoroughly worth while. It is amazing how such a highly technical program attracts such increasing numbers. The only answer is that ophthalmologists want to learn, and at that meeting they can hear a man really give the background of his work and develop his thesis in decency and in order. To be sure, the system of quizzing by Commissioners is cumbersome, fails largely in its purpose, and could be better supplanted by four or five invited critics of each paper who might well enough occupy platform chairs having individual microphones during the presentation of the paper and afterwards try by questions or criticisms to get everything possible on the subject from the author.

This thought leads directly to a suggestion for a change in programs; namely, on one day of the session, or better two, have invited speakers, or preferably demonstrators, to present a subject on which they are known to be well versed; make these talks visual as much as possible, allow an hour if desired, stress informality, originality is not at all necessary, and use informal discussion as previously outlined for the research society. Perhaps all publication of the material could be eliminated; the idea that their spoken word will be printed has a most inhibiting effect on most speakers, and especially is this true of discussers. Utilize the last one or two days, as preferred, but better only one, for the usual short papers. I am firmly convinced that such a program would draw a vote of ten to one against the method now in general use, would take the dullness out of meetings, and increase their value many fold.

Lawrence T. Post.

BOOK NOTICES

The supravestibular system in animals and man with particular reference to the clinical aspect of the conjugate paralyses of the ocular muscles, of so-called frontal-lobe ataxia, and of the forced positions and forced movements of the body. By Dr. L. J. J. Muskens, N. V. Noord-Hollandsche Uitgevers-Maatschap-

pji, Amsterdam, 1934. 504 pages, 48 illustrations. Price, Gld. 15.

For many years the author has insisted that one can hope to understand the conjugate ocular movements in the horizontal, frontal, and vertical planes only when one has studied the coordination of the ocular movements as they occur in the lowest vertebrates upwards through the entire line of vertebrates to man. For over 150 pages, there are recorded the observations of others and of the author on the results of experimental lesions of the brains of various vertebrates as well as of symmetrically constructed invertebrates. After definite injuries to the central nervous system, typical forced movements of the body generally and uniformly appear in the entire series of vertebrates, as long as the cerebellum, the midbrain, and the interbrain are functioning. The same is true in the higher mammals with the exception of the primates and man, where the cerebrum has become the controlling organ and the upright position of the body has produced a fundamental alteration in all the vestibular and supravestibular functions. The forced movements of the body in all these animals including man occur in three planes, circular movements in the horizontal plane, rolling movements in the frontal plane, and falling forwards or backwards in the vertical plane. The forced positions of the eyes occur in a manner corresponding to those of other movable parts of animals, such as the tail, fins, and extremities, and can appear as a deviation of the sight in a definite direction. A forced position of the eyes may also mean a condition in which the eyes cannot be turned in the opposite direction (conjugate paralysis of the ocular muscles). There is also discussed the diagnostic significance of the tendency to fall forwards and backwards in affections of the brain stem and in connection therewith the function of the inferior olive. It has never been proved that a lesion or irritation of cortical centers (without involvement of the striate body) can bring about forced bodily or ocular positions and movements. The author states that he has been experimenting and studying the supravestibular system since 1892. It is only recently that sufficient knowledge of the nerve paths concerned has made it possible to obtain any coordination in the results after definite injuries of the brain stem.

This work is of great importance. It is indispensable to those who would be accurately informed regarding the supranuclear connections of the vestibular apparatus and of the external ocular muscles. It discusses all the elements participating in this intricate but fundamental field. The author is easily understood since he greatly simplifies a most complex subject. The very extensive amount of text is appropriately and clearly arranged under headings and subheadings. The author has earned by this work a position of high authority in the knowledge of the supravestibular system.

Harvey D. Lamb.

Ueber die bazilläre Aetiologie verschiedener Augenkrankheiten (Concerning the tuberculous etiology of various eye diseases). By Prof. Dr. J. Meller, Chief of the I. University Eye Clinic in Vienna. Paper covers, 43 pages, no illustrations, price 3 marks. Verlag von S. Karger, Berlin, 1935.

The substance of this monograph appeared originally in papers which have been abstracted in the American Journal of Ophthalmology [1932, volume 15, page 995; 1933, volume 16, page 247 (editorial); 1933, volume 16, page 370].

Meller not only claims to have proved definitely that sympathetic ophthalmia is tuberculosis locating in the uveal tract of the injured eye, but he attributes to tuberculosis a number of other uveal disturbances not commonly attributed to that disease. Both Meller's conclusions, and also the technique employed and the results announced by his pathologist colleague Löwenstein, have been vigorously disputed by a number of leading German and Austrian ophthalmologists.

W. H. Crisp.

Transactions of the American Ophthalmological Society. 1934, vol. 32. Cloth bound, illustrations, 639 pages. Wm. F. Fell Co., Philadelphia.

The 32d volume is quite comparable to its predecessors. The form is similar and the contents of corresponding importance. There are twenty-five papers which were read before the society and nine accepted candidates' theses. To select any one or even a few papers for special mention is difficult in this excellent collection.

Many of these papers have been published in this Journal and in the Archives of Ophthalmology.

Lawrence T. Post.

Das Trachom (Trachoma). By Prof. Dr. A. Peters, Director of the University Eye Clinic in Rostock. Stiff paper covers, 289 pages, no illustrations, price 16 marks. Verlag von S. Karger, Berlin, 1935.

Apart from certain rather obvious limitations in the author's access to the world literature of trachoma, and also apart from some slovenliness in preparation of the bibliographic lists, this work is a painstaking compilation of the literature on trachoma. It includes a short history of trachoma, a list of monographs on the subject, a chapter on the clinical picture of trachoma, one on the histology of trachoma, one on the search for the exciting agent of trachoma, one on contagiosity and immunity, one on the combating and prophylaxis of trachoma, one on the geographic distribution of trachoma, and a final chapter on the treatment of trachoma.

Recent therapeutic proposals are reviewed, and recent investigations as to the possibile part played by Bacillus granulosis in the causation of trachoma are mentioned, including those of some American writers. Unfortunately, the bibliographic lists make it only too evident that the author's acquaintance with non-German literature is almost entirely restricted to such abstracts as appear in German publications. The ridiculous result is that any reader of this volume who desires fuller acquaintance with the references given will find it necessary to obtain the German abstracts in order to discover their origin. Whole groups of references, obviously derived from French, Italian, or English language sources, are attributed to the Zentralblatt für die gesamte Ophthalmologie und ihre Grenzebiete. Such an origin is given, for example, for papers by Bengtson, Thygeson, and Wilson, while further papers by Finnoff and Thygeson are attributed to Klinische Monatsblätter für Augenheilkunde.

Each chapter has a detailed table of contents, but the volume as a whole has no alphabetic index.

W. H. Crisp.

ABSTRACT DEPARTMENT

EDITED BY DR. WILLIAM H. CRISP

Abstracts are classified under the divisions listed below, which broadly correspond to those formerly used in the Ophthalmic Year Book. It must be remembered that any given paper may belong to several divisions of ophthalmology, although here it is only mentioned in one. Not all of the headings will necessarily be found in any one issue of the Journal.

CLASSIFICATION

1. General methods of diagnosis
2. Therapeutics and operations
3. Physiologic optics, refraction, and color vision
4. Ocular movements
5. Conjunctiva
6. Cornea and sclera
7. Uveal tract, sympathetic disease, and aqueous humor
8. Glaucoma and ocular tension
9. Crystalline lens
10. Retina and vitreous
11. Optic nerve and toxic amblyopias
12. Visual tracts and centers
13. Eyeball and orbit
14. Eyelids and lacrimal apparatus
15. Tumors
16. Injuries
17. Systemic diseases and parasites
18. Hygiene, sociology, education, and history
19. Anatomy and embryology

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7. UVEAL TRACT, SYMPATHETIC DISEASE, AND AQUEOUS HUMOR

Machemer, H. **Contributions to the physiology and pathology of the pupil. 2, On the course of the normal pupillary reflex.** Klin. M. f. Augenh., 1935, v. 94, March, p. 305. (Ill.)

The measurements were made with the kinematographic apparatus as already described (see American Journal of Ophthalmology, 1933, volume 16, page 1127). Preliminary dilatation is not a constant phenomenon of the light reflex. The duration of the latent period is constant. Within the contraction phase the light reflex occurs as a uniform motion which can be defined mathematically. It has the form of an "aperiodically dulled oscillation." Incipient velocity and diminution of velocity are influenced by the diameter of the pupil at the start.

C. Zimmermann.

Reese, A. B. **The occurrence of ciliary processes on the iris.** Amer. Jour. Ophth., 1935, v. 18, Jan., pp. 6-9; also Trans. Amer. Ophth. Soc., 1934, v. 32, p. 127.

Simões, Elysio. **Syndrome of Claude Bernard Horner.** Rev. de Ophth., de São Paulo, 1934, v. 4, Dec., pp. 28-31.

This is a brief discussion of the syndrome, in Portuguese.

8. GLAUCOMA AND OCULAR TENSION

De' Cori, R. **Glaucoma and myopia.** Boll. d'Ocul., 1934, v. 13, July, pp. 875-927.

The author gives the history of thirty-four cases of simple and secondary glaucoma in myopic eyes. The age of the patients ranged from thirty-seven to seventy-six years, the myopia went as high as 22 D., and the tension as high as 85 mm. of Hg. All the patients were operated on by the Elliot or Lagrange method, with improvement of vision and permanent lowering of tension to within normal limits. It is the aim of the writer to demonstrate that no antagonism exists between glaucoma and myopia, and that no refractive state is pathogenetic for glaucoma. (Bibliography, twelve figures.)

M. Lombardo.

Grosz, E. **Concerning glaucoma operations.** Wien. med. Woch., 1935, March 16, p. 12.

The author gives data concerning glaucoma operations at the first eye clinic in Budapest during the last thirty years, 6,043 patients being admitted to the hospital for treatment of glaucoma

and 6,000 patients treated for glaucoma in the out-patient department. Grosz does iridectomy in acute inflammatory glaucoma, but agrees that it is of no value in glaucoma simplex and chronic inflammatory glaucoma. For the latter he does trephining or cyclodialysis. Of the hospital patients, 4,927 were operated on for primary glaucoma; iridectomy being used in 2,773, Elliot's trephining in 755, Lagrange's iridosclerectomy in 168, cyclodialysis in 1,006, sclerotomy in 215, and Holth's iridencleisis in ten. Of cases of chronic inflammatory glaucoma, cyclodialysis was immediately successful in 87.7 percent, after one year in 62 percent, after two years in 54 percent, and after three years in 50 percent. If cyclodialysis was unsuccessful, trephining was resorted to. The author prefers anterior sclerectomy for juvenile glaucoma and Lagrange's iridosclerectomy for glaucoma simplex. Theodore M. Shapira.

Nowkirischky, A. D. **A new chart for registering intraocular tension.** Klin M. f. Augenh., 1935, v. 94, Feb., p. 235. (Ill.)

The length of the abscissa for curves during twenty-four hours is 6 cm. Night curves are indicated by heavier type. The charts may be obtained from Graphische Anstalt Wassermann A.-G., 5, Leonhard Strasse, Basel, Switzerland.
C. Zimmermann.

Poos, F. **Closure of the lids and ocular tension.** Klin, M. f. Augenh., 1935, v. 94, Feb., p. 163. (Ill.)

After long simple closure of the lids, Poos found increase of ocular tension so frequent and of such amount that simple closure of the lids may be regarded as a physiologic test in glaucoma and the preglaucomatous state. In the daytime the blood pressure in the recumbent is higher than in the sitting position, and the latter is higher than in the standing position.
C. Zimmermann.

Szász, A. **A clinical contribution to the pathology and therapy of glaucoma.** Arch. f. Augenh., 1934, v. 108, Dec., p. 621.

Clinical observations confirm the author in his theory as to difference between the basis and course of simple and inflammatory glaucoma respectively. While the first can be traced back to increased sympathicotonus, the latter is caused by a pathologic change in metabolism as a result of loss or diminution of parasympathicotonus. In glaucoma simplex one should operate early but do little; while in inflammatory glaucoma one should operate early and energetically. R. Grunfeld.

Szász, A. **Variations of tension in the inflamed eye.** Arch. f. Augenh., 1934, v. 108, Dec., p. 614.

The circulatory disturbances in an inflamed eye resemble those of any other inflamed tissue. Rise of tension at the beginning of an inflammation is caused by hyperemia of the capillaries, followed by exudation and increased aqueous formation, in the presence of normal or decreased facility for drainage. As soon as the inflammation reaches the venous system, the veins dilate enormously, and increased facility for absorption is given, which results in hypotension. These experimental results support Hamburger in his attempt to treat glaucoma with inflammation in controlled dosage.
R. Grunfeld.

Weinstein, Paul. **The relation of glaucoma to blood pressure.** Arch. of Ophth., 1935, v. 13, Feb., pp. 181-186.

The blood pressures of 150 patients with glaucoma, 100 healthy persons, and 50 patients with thrombosis of the central vein were taken. Apparently hypertension does not predispose to glaucoma. The condition of vessel walls was determined by the use of a Plesch tonoscillograph. The author finds that acute and chronic glaucoma are characterized by vasolability and by higher pressure in the capillaries; and that they are closely associated with disturbance of internal secretions at the climacteric and in menstrual disorders of young women. In the cases of hemorrhagic glaucoma he found higher pressure in the precapillaries and stiffness

of the greater vessels. Glaucoma simplex might be explained on the basis of nutritional disturbance caused by a prearteriosclerotic condition.

J. Hewitt Judd.

9. CRYSTALLINE LENS

Bencini, A. **Cataract extraction in eyes operated on after antiglaucomatous fistulation.** Boll. d'Ocul., 1934, v. 13, Aug., pp. 1079-1087.

The writer extracted cataract from four glaucomatous eyes which had been previously treated with the Elliot or the Lagrange operation. A sclerocorneal incision with conjunctival flap in the inferior quadrant was performed with satisfactory result. (Bibliography, one figure.) M. Lombardo.

Bucklers, M. **The absorption of the visible spectrum by the human lens.** Arch. f. Augenh., 1934, v. 108, Nov., p. 479.

The author illuminates the lens by the Spalteholz method for the purpose of spectrography. This increases its transparency, diminishes reflection, and avoids postmortem opacities. Since the color of the human lens itself varies from brightest yellow-green to deepest brown-red, it therefore absorbs rays of the whole visible spectrum from the remotest violet down to orange. Consequently not only blue and yellow but also violet blindness occurs. But red is always perceived. The yellow of the lens does not protect against short-waved light, but provides for better distant vision. R. Grunfeld.

Bücklers, Max. **Clinical and histologic investigations on superficial capsular cataract.** Klin. M. f. Augenh., 1935, v. 94, March, p. 289. (Ill.)

Three patients with cataract, whose anterior ocular segments were intact, were examined with the biomicroscope before operation, and after careful extraction within the capsule the lenses were studied histologically. Capsules were firmly united with the capsular cataract. The cataract is caused by proliferation of the capsular epithelium, which is transformed into spindle cells. Between these develop fine fibers which stain like collagen fibrillae. A basement substance of equal refractive index is secreted, while the cells diminish. Thus arises a solid glassy mass containing only a few nuclei. C. Zimmermann.

Caramazza, F. **Biomicroscopy of the vitreous in aphakia.** Boll. d'Ocul., 1934, v. 13, Sept., pp. 1173-1216.

The writer describes the biomicroscopic aspect of the vitreous regarding structure, volume, form and relations with iris and anterior chamber, in thirty-one patients who had been operated on for senile cataract by the intracapsular or extracapsular method, or for discission or removal of secondary cataract, either with or without loss of vitreous. He thinks the extracapsular method with or without iridectomy is to be regarded usually as the method of choice if a large capsulotomy is performed and cortical substance well removed. (Bibliography, thirty-seven illustrations.) M. Lombardo.

Dérer, Josef. **Bilateral cataract operations.** Klin. M. f. Augenh., 1935, v. 94, Feb., p. 241.

In accordance with Elschnig and Vajda, and from his own experience, Dérer sees no objection to bilateral cataract operations under strict adherence to the precautions recommended by Elschnig. He feels that a bilateral operation in a feeble woman might have avoided her death, which occurred after the repeated excitements connected with two separate successful cataract extractions.

C. Zimmermann.

De Vecchi, I. **Experimental research on the question of the bacteriologic etiology of human cataract.** Ann. di Ottal., 1935, v. 63, Feb., p. 98.

Lavagna has reported experiments in which he succeeded in producing cataract in rabbits by inoculation from human cataractous lenses. He associated cataract in man in many instances with rheumatic arthritis. He concluded that the cataractous process was not an aseptic disintegration of the crystal-

line but a definite chronic phlogosis dependent upon an organism of the streptodiplococcic group. The experiments of the author were made on guinea pigs for the purpose of verifying or disproving Lavagna's contention. The results were wholly negative. He neither succeeded in producing opacity of the lens by general or local bacterial inoculations, nor in finding organisms in the lens substance. He considers that the diplostomum found in the lenses of certain fishes by Park Lewis did not gain entrance through the normal capsule but only after integrity had been impaired by defective nutrition. (Bibliography.) Park Lewis.

Fischer, F. P. **The fluorescent substances of the lens.** Arch. f. Augenh., 1934, v. 108, Nov., p. 544.

The author found that deproteinized lens filtrate fluoresced vividly even after treatment with Folin's silver-lactate solution. He separated a yellowish-brown mass which had the same fluorescing qualities as the lens itself and was present in greater amounts in lenses of older animals, and especially in cataractous lenses. Its chemical nature is not known. It is not albumen, carbohydrate, fat, melanin or lipochrome. It has no oxidizing qualities. It is easily soluble in water, chloroform, or ammonia. R. Grunfeld.

Fischer, F. P. **Further experiments concerning the water-binding of the lens.** Arch. f. Augenh., 1934, v. 108, Nov., p. 517.

Further experiments and measurements concerning the intensity of the water-binding power of the lens are reported. The water in the lens is chiefly bound to colloid. In a thermostat at 37° C. the sclera and the cornea become constant in weight within sixty to eighty minutes, while the lens takes fourteen days for this. The lens swells more quickly and holds the water more persistently, yet is able to exclude the fluid by an active process. Experiments are described which suggest that the lens hinders entrance of H ions and exit of K ions. Since in cataractous lenses the potassium content is diminished, the factor which normally keeps the K constant of the lens balanced must be lost in cataractous lenses. R. Grunfeld.

Fischer, F. P. **The reducing substances of the lens.** Arch. f. Augenh., 1934, v. 108, Nov., p. 527.

The oxidation system of the lens consists of three water-soluble substances, namely glutathion, vitamin C, the yellow respiratory ferment vitamin B_2, with the oxydase enzyme vitamin A and protein. The ability of the protein to reduce is due to its cystein content. The glutathion is present in a reversible form (oxidized and reduced). The vitamin C is irreversible. The author describes in detail how he determines the amount and localization of the glutathion, and how the lens renews its vitamin-C content. In cataractous lenses the autooxidation systems are missing, or are greatly diminished because of preceding changes in permeability. The latter may be the first among the complex changes to which the formation of cataract is attributable. R. Grunfeld.

Gurewitsch, A. **The vitamin-C content (reduced form) of the lens and aqueous in cattle of various ages and in cataract.** Arch. f. Augenh., 1934, v. 108, Nov., p. 572.

The vitamin-C content was determined by the Tillman-Harris method (titration of the trichloracetic-acid filtrate with dichlorphenolindophenol). Beginning with the second year, the ascorbic acid diminishes with the age of the animal. To vitamin C is credited thirty percent of the total reducing capacity of the lens, while the rest is due to glutathion. Vitamin C diminishes thirty percent, glutathion only twenty percent with age. The nucleus of one to two-year-old calves contains twenty-eight percent less ascorbic acid than the cortex, and in older animals the difference is forty percent. The aqueous of calves contains less vitamin C than that of older animals. In cataractous lenses the vitamin C is greatly diminished, but the aqueous does not always show a similar loss. R. Grunfeld.

Huber, Oth. **Family tree with unusual incidence of cataract.** Zeit. f. Augenh., 1935, v. 85, March, p. 310.

Huber reports the family tree of the family Elmer of Elm in which senile cataract is frequent, and also myotonic dystrophy with its typical resettelike cataract. The cataract is inherited dominantly and is not sex-linked. Five generations have been traced.

F. Herbert Haessler.

Krause, A. C. **Chemistry of the lens. 6. Lipids.** Arch. of Ophth., 1935, v. 13, Feb., pp. 187-190.

Determinations were carried out on bovine lenses (one year old). The amount of lipids in the lens was found to be very low. The amount of fats in the lens was determined to be the lowest of all such amounts in ocular tissues. The amount of phospholipid was partly dependent on the number of active living lenticular cells. The lipids containing phosphorus were nearly two-thirds lecithin and about one-third cephalin and sphingomyelin. Cholesterol was found free in the normal lens and combined, free, or both in the pathologic lens. The amount of carotene present was minimal.

J. Hewitt Judd.

Krause, A. C. **Chemistry of the lens. 7. Growth and senescence.** Arch. of Ophth., 1935, v. 13, Jan., pp. 71-77.

The lenses were removed from albino and other rabbits by dissection as soon as possible after death, and were weighed in glass-stoppered bottles. The tabulated results show that the normal mammalian lens grows towards a maximum and not continuously. The growth in weight depends upon the breed of animal. The process of growth follows that of a monomolecular reaction. Senile cataract probably results from a biologic process of senescence.

J. Hewitt Judd.

Luo, T. H. **Posterior lenticonus (report of a case).** Brit. Jour. Ophth., 1935, v. 19, April, p. 210.

The patient was a boy aged thirteen years. The eyes were apparently normal at ten years. The mother had congenital cataracts. The mother's father and one of her sisters had had lens opacities since childhood. The boy's general health was good. In the pupillary area were greyish-white opacities. Under the slitlamp the posterior surface of the lens showed a cup-shaped protrusion into the vitreous, with densely opaque walls, but clear lens substance within the conus. In the right lens there was an irregular-shaped opacity at the posterior pole of the embryonic nucleus. (Two illustrations, references.) D. F. Harbridge.

Manes, A. J. **Cataract extraction in the indocile and decrepit.** Arch. de Oft. de Buenos Aires, 1934, v. 9, Oct., p. 434.

The special precautions necessary in the presence of cardiorenal and pulmonary disease and disease of the central nervous system are briefly outlined. Intracapsular extraction, with iridectomy and Arruga capsule forceps, and lid suture after operation, is found of advantage. (Illustrated.)

M. Davidson.

Monjukowa, N. K., and Fradkin, M. J. **Further experimental findings on the question of the pathogenesis of cataract.** Graefe's Arch., 1935, v. 133, p. 378.

Experiments on the fetuses of guinea-pigs showed that the failure of the specific permeability of the eye might play a definite part in congenital cataract. In fetal life, where the diet lacks vitamin C, this C-avitaminosis is the only factor at fault, since permeability of the eye is absent in the fetus.

H. D. Lamb.

Müller, H. K., and Buschke, W. **Lens respiration and the vitamin C of the aqueous.** Arch. f. Augenh., 1934, v. 108, Nov., p. 592.

Series of experiments are described which prove that the lens uses vitamin C for internal respiratory purposes. The lens delivers hydrogen to the vitamin C. R. Grunfeld.

Müller, H. K., and Buschke, W. **Naphthalin cataract treated with vita-**

min C. Arch. f. Augenh., 1934, v. 108, Nov., p. 468.

Earlier investigations by the authors showed that in naphthalin poisoning the vitamin-C content of the aqueous disappeared, and that vitamin C was useful as an internal respiratory agent of the lens. The authors injected ascorbic acid into the veins of rabbits after producing cataract by naphthalin poisoning. They established that the vitamin-C content of the aqueous was thus increased 100 percent. Whereas out of twelve rabbits nine showed improvement after injection of ascorbic acid (that is, the opacities diminished or disappeared), out of twelve control animals only five showed such improvement. But the small number of animals used in these experiments does not allow of safe conclusions.

R. Grunfeld.

Russo, A. **Congenital hereditary familial cataracts. Central pulverulent cataract.** Ann. di Ottal., 1935, v. 63, Feb., p. 105.

After careful analysis of the various theories offered in explanation of congenital cataract the author reports five cases of central pulverulent cataract as described by Vogt in 1921. These were hereditary and familial and were seen in individuals aged thirteen to sixty-seven years. Four were in a father and his three sons. There was consanguinity between the parents. The fifth subject was the brother and uncle of these four, who had married a woman to whom he was not related. Biomicroscopy in five of his eight sons showed no lenticular aberrations from normal. The author concludes that the transmission was of the Mendelian recessive type resulting from parental consanguinity. (Bibliography.)

Park Lewis.

Salit, P. W., and O'Brien, C. S. **Cholesterol content of cataractous human lenses.** Arch. of Ophth., 1935, v. 13, Feb., pp. 227-237.

The literature on the cholesterol content of normal and cataractous crystalline lenses is reviewed. One hundred and four lenses with cataracts in various stages were studied. It is concluded that as a group cataractous lenses do not differ in their cholesterol content from normal lenses of persons of similar age. The finding of several investigators that increased age causes an increase in cholesterol content is verified.

J. Hewitt Judd.

Schnyder, W. F. **Physics of ultrared cataract and its evaluation by physicists.** Klin. M. f. Augenh., 1935, v. 94, March, p. 366.

Schnyder criticizes Goldmann's five cataract hypotheses and records confirmation by prominent physicists of the correctness of Vogt's observation that only the penetrating ultrared enters the eye without damage to cornea and iris and so produces cataract.

C. Zimmermann.

Strauss, Walter. **The Ehrlich fluorescein experiment in beginning naphthalin cataract.** Arch. f. Augenh., 1934, v. 108, Nov., p. 585.

In the ear veins of ten rabbits 1 c. c. of five percent sodium fluorescein was injected, and the time was noted when the Ehrlich line was first seen with the aid of the slitlamp. The same animals were given daily 1 gm. of naphthalin orally, and as soon as the first cataractous changes occurred the appearance of the Ehrlich line was again determined. In eight cases it appeared earlier than with the first experiment. The author concludes that in naphthalin poisoning vitamin C disappears from the aqueous because of increased permeability. The protein content of the aqueous is also increased, and the intraocular tension is diminished.

R. Grunfeld.

Vogelsang, K. **Elastometric measurements on animal lenses.** Arch. f. Augenh., 1934, v. 108, Nov., p. 565.

The author used the Bethe-Steinhausen-Richter elastometer, which consists of a hammer and a lever. The lever hits the object to be measured, and the oscillations of the lever, upon which a mirror is fastened, are registered by the photokymographion. (Illustrations.)

R. Grunfeld.

Wolfe, Otis. **Posterior lenticonus.** Amer. Jour. Ophth., 1935, v. 18, May, p. 462.

10. RETINA AND VITREOUS

Belgeri, F., and Dusseldorp, M. **Detachment of the retina. Case reports.** Arch. de Oft. de Buenos Aires, 1934, v. 9, Aug.-Sept., p. 359.

In searching for the tear, the direction of the initial scotoma noticed by the patient is helpful. Generally the scotoma and the tear coincide. The simplest method for exact localization is the Trantas transcleral illumination with the Lange-Zeiss curved contact lamp and simultaneous ophthalmoscopy. Of thirteen cases operated on by diathermy, some in combination with galvanopuncture, five resulted in complete reattachment, two in partial reattachment, three relapsed in from one to two months, and three were not benefited at all. Tuberculin was administered in six cases and antiluetic treatment in two others for presumed or verified etiologic factors.

M. Davidson.

Bencini, A. **Edmund Jensen's retinochoroiditis.** Boll. d'Ocul., 1934, v. 13, Sept., pp. 1129-1172.

The writer gives a detailed report of six cases of juxtapapillary retinochoroiditis. The age of the patients ranged from nineteen to forty-four years. The examination revealed the classic oval white area near the disc or surrounding it, the characteristic scotoma, floating exudates in the vitreous, and in some cases deposits on the posterior surface of the cornea. The writer believes Jensen's disease prevalently of tuberculous or luetic origin. (Bibliography, thirty-nine figures.) M. Lombardo.

Caramazza, F. **Septic neuroretinitis from hemolytic streptococcus.** Rassegna Ital. d'Ottal., 1935, v. 4, Jan.-Feb., p. 19.

Characteristic of this type of retinitis, first described by Roth, are white spots in the retina and retinal hemorrhages. They are generally found in the central region of the posterior segment of the globe, near the papilla. They do not break down and develop into panophthalmitis. Caramazza's patient was a man of twenty-five years who had suffered from acute attacks of articular rheumatism with valvular heart lesions. A complete post-mortem examination is detailed. The histologic changes in the fundi are well illustrated. The eyegrounds were studied ophthalmoscopically for twenty days before death and the picture did not alter. The papilla was yellowish gray and elevated, and faded off into the adjacent retina. Upon the latter were numerous whitish cords which radiated from the papilla and resembled folds. Scattered between them were hemorrhages of varying size and form. Streptococcus hemolyticus was isolated from the blood stream. The differential diagnosis is explained. (Eighteen figures.)

Eugene M. Blake.

Caramazza, F. **Treatment of retinal detachment by diathermocoagulation.** Boll. d'Ocul., 1934, v. 13, July, pp. 961-995.

The writer reports eleven cases of retinal detachment treated by diascleral diathermocoagulation followed by two scleral punctures for evacuation of the subretinal fluid. Six of seven cases which recovered permanently had shown multiple tears. The writer prefers this method because it can be applied over a large area. If diathermy is to be applied under a muscle this is split longitudinally. (Bibliography, fourteen figures.) M. Lombardo.

Copeland, M. M., Craver, L. F., and Reese, A. B. **Neurofibromatosis with ocular changes and involvement of the thoracic spine.** Arch. of Surg., 1934, v. 29, July, p. 108.

Recklinghausen's disease was accompanied by extensive medullation of the nerve fiber layer of the retinas and marked right lateral scoliosis of the upper dorsal region, with bone destruction in the bodies of the thoracic vertebrae and in the adjacent ribs, due to neurofibromas arising from the spinal nerve roots. From a large number of

routine examinations the author quotes figures to show that the incidence of medullated nerve fibers in the retina is greater among patients who show definite abnormality of the central nervous system or have psychopathic disturbances. Edna M. Reynolds.

Coppez, Léon. **Detachment of the retina. Treatment by means of the pyrometric electrode.** Arch. of Ophth., 1935, v. 13, Jan., pp. 1-2.

This is a brief statement of the method described at greater length in previous papers (see American Journal of Ophthalmology, 1934, January, page 86, and October, page 986).

Damel, C. S. **Thrombosis of the superior temporal vein.** Arch. de Oft. de Buenos Aires, 1934, v. 9, Aug.-Sept., p. 372.

The retinographs accompanying a case report illustrate the evolution, down to complete disappearance, not only of hemorrhages but of an accompanying white star-shaped figure at the macula. Fine newly formed collateral vessels could be followed through the affected territory. M. Davidson.

Deutschmann, R. **Treatment of detachment of the retina with tincture of iodine and carbonic acid snow.** Klin. M. f. Augenh., 1935, v. 94, March, p. 349.

Deutschmann again recommends his method (see American Journal of Ophthalmology, 1934, volume 17, page 275) after further favorable tests in conjunction with Gilbert and Krause. The sclera is scarified with a small knife before application of tincture of iodine or carbonic acid snow. If the retinal tear lies farther back, the conjunctiva and muscle belly are undermined without dividing the muscle, and the sharpened cylinder of carbon-dioxide snow carried back to the seat of the tear. With regard to all operative procedures the author emphasizes that if one sees a patient again in a long time after he has been operated upon very successfully the retina may be adherent to the choroid, and yet vision be lost from inflammatory or atrophic changes. It must not be forgotten that myopia is a severe disease, unfortunately very progressive, and detachment only one of its symptoms. C. Zimmermann.

Dunnington, J. H., and Macnie, J. P. **Detachment of the retina: report on operative results in 150 cases.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 133; also Arch. of Ophth., 1935, v. 13, Feb., p. 191.

Of this series of 150 cases of retinal detachment 64 percent were in males and 36 percent were in females. The average age was 39.8 years, the oldest being 75 and the youngest 5 years. A positive history of trauma was obtained in 30 percent and an additional 11.3 percent gave a history suggestive of injury, making a total of 41.3 percent in which trauma was at least a probable etiologic factor. Some degree of myopia was present in 66.6 percent, 36-6 percent having 6 or more diopters of myopia. Only 8 percent of the entire group were aphakic. Severance and reattachment of the recti muscles rarely produced any noteworthy muscular imbalance. Intraocular tension was not permanently affected by the operation. Marked hypotony was found to be a very grave prognostic sign. Postoperative changes in the lens were rarely noted. Some impairment of the field of vision was commonly seen after a successful operation. Detachment of approximately one-half of the retina was cured in 49.5 percent, while of those with approximately three-fourths of the retina detached only 25 percent were benefited. The inferior half of the retina was detached about twice as frequently as any other part. Those cases in which no holes were found responded to operation about as well as those in which one or more holes were located. Of the 155 eyes operated upon, 38 percent were cured, 9.8 percent were improved, and 52.2 percent were failures. The results obtained with the chemical cauterization method of Guist and Lindner were just as good as those obtained by the electrocoagulation method of Walker. Widespread treatment of the affected

area seemed to be necessary to effect a cure. (Discussion.)

George H. Stine.

Farina, F. **Sympathetic papilloretinitis.** Rassegna Ital. d'Ottal., 1935, v. 4, Jan.-Feb., p. 71. (See Section 7, Uveal tract, sympathetic disease, and aqueous humor.)

Folk, M. L., and Soskin, S. **The fundus oculi in diabetes mellitus.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 432-437; also Trans. Amer. Acad. Ophth., and Otolaryng., 1934, 39th meeting, p. 266.

Giannoni, A., and Focosi, M. **Studies on hemorrhagic syndromes.** Boll. d'Ocul., 1934, v. 13, July, pp. 928-995.

The authors give the history of nine myopic patients, five men, with hemorrhages of the fundus, whose general examination revealed that they were affected by a hemorrhagic diathesis. Many such patients are to be regarded as belonging to the group of venous hemorrhagic diathesis, the pathogenesis of which lies in a complex of changes of the whole venous system, characterized by hypotony, a tendency to ectasia, and fragility of the venous walls. (Bibliography.)

M. Lombardo.

Gilbert, W. **Periphlebitis and endovasculitis of the retinal vessels, with remarks on sclerotic, tuberculous and septic diseases of the choroid.** Klin. M. f. Augenh., 1935, v. 94, March, p. 335. (Ill.)

Gilbert reports two cases of juvenile intraocular hemorrhage caused by thrombangitis, which Marchesani considers the etiologic factor. Gilbert opposes this and discusses the importance of tuberculosis in the picture of diseases of the retinal vessels, referring to former communications in which he described his findings of granulation tissue with giant cells and round cell infiltration in the venous walls. He advocates a unified interpretation of various disorders occurring in the same eye, such as phlyctenule, scleritis, nodular iritis, and periphlebitis, and adopts the same attitude with regard to vasosclerosis, for instance in circulatory disturbances of the anterior and posterior portions of the uvea in nephrosclerosis. Disseminated choroiditis is predominantly attributed to tuberculosis. Ophthalmia lenta without doubt affects tuberculous individuals but tuberculosis is not necessary for it.

C. Zimmermann.

Goldstein, I., and Wexler, D. **Histologic observations on the fundus in leukemia.** Arch. of Ophth., 1935, v. 13, Jan., pp. 26-32.

The histologic findings in the examination of the globes in eleven cases of leukemia are presented. There were three cases of chronic myeloid leukemia, five of acute myeloid leukemia, two of chronic lymphatic leukemia, and one of aleukemic lymphadenosis. Two cases are reported in detail. The histologic changes are well shown by photomicrographs and the ophthalmoscopic findings are summarized in a table.

J. Hewitt Judd.

Gresser, E. B. **Studies of retinopathies. 2. Essential hypertension, 3. Diffuse glomerular nephritis.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 426-431.

Hughes, H. **Classification, etiology, pathogenesis, and course of "albuminuric" retinitis.** Zent. f. innere Med., 1935, March 23, p. 242.

After ophthalmoscopically examining 405 patients with high blood pressure, the author groups them according to the retinal picture and the underlying disease as (1) complete picture of angiospastic neuroretinitis; (2) atypical retinitis, (A) neuritis, peripapillary edema, (B) cotton-wool exudates; (3) arteriosclerotic retinitis; (4) retinitis due to thrombosis. Circulatory disturbances of the retina are responsible for all forms of retinitis, whether functional through a general vessel constriction or circumscribed angiospasm, or organic through sclerosis of the vessels.

Theodore M. Shapira.

Imre, Joseph. **Further data on electrolysis in retinal detachment.** Zeit. f. Augenh., 1935, v. 85, March, p. 337.

Imre further elaborates details of his publications in journals and at regular meetings in order to establish his priority in the use of electrolysis, which priority Vogt has contested.

F. Herbert Haessler.

Klein, Miklos. **Contact glass for use in operations on retinal detachment.** Arch. of Ophth., 1935, v. 13, Feb., pp. 250-251.

A contact glass is described with a narrow scleral portion which is notched so that it can be sutured to the globe. The opposite margins are also notched so as to permit measurements from the limbus with a compass.

J. Hewitt Judd.

Kokott, Werner. **Clinical investigations on the etiology of juvenile recurring hemorrhage into the vitreous.** Klin. M. f. Augenh., 1935, v. 94, March, p. 327.

Five cases of juvenile recurring hemorrhage into the vitreous, of which four had ophthalmoscopically proved to be due to retinal periphlebitis, were given a thorough internal medical examination. In none was thromboangiitis obliterans found, two had certain and one possible tuberculosis, two had chronic uveitis but no internal affection. Thus the picture of retinal periphlebitis and juvenile recurring hemorrhage into the vitreous may well be caused by tuberculosis. Marchesani's observations of thromboangiitis obliterans indicate that juvenile recurring hemorrhage and retinal periphlebitis are not etiologically identical.

C. Zimmermann.

Koyanagi, Y. **Does hypertony play an essential part in diabetic retinitis?** Klin. M. f. Augenh., 1935, v. 94, March, p. 355. (Ill.)

Fifteen cases of diabetic retinitis are reported. In more than one-half the maximal blood pressure did not exceed 150 mm. Hg. In relation to age only one-third showed pathologic hypertony. This and the spontaneous subsidence of the retinal changes speak against the angiospastic theory. Autopsy of one case showed diabetic retinitis as an independent disorder. It differed from nephritic retinitis in presenting normal pigment epithelium, no edematous imbibition, and white spots consisting of an albuminous transudate. Sclerotic thickening of the vessel walls seemed to be the essential change in diabetic retinitis, in accordance with the observations of many authors.

C. Zimmermann.

Lyle, D. J. **Detachment of the internal limiting membrane of the retina.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 201.

The author concludes that detachment of the internal limiting membrane of the retina is frequently a sequel to lesions of the fundus, or shrinkage of the vitreous. Smaller detachments or grooves (wrinkling) are seen in edema or following atrophy of the anterior retinal layers. The condition has certain characteristics by which it may be differentiated from other conditions of more or less similar appearance. (Sixteen figures, bibliography, discussion.)

George H. Stine.

Machemer, H. **History of electrolytic treatment of detachment of the retina.** Klin. M. f. Augenh., 1935, v. 94, Feb., p. 193.

The first applications of electrolysis in detachment of the retina were made in 1893 by Schoeler and Albrand, and independently by Abadie; but it was gradually abandoned. It had been initiated from points of view differing from those now advanced by Szily and Machemer. A historical synopsis is given of the employment of the galvanic current in this affection by other authors.

C. Zimmermann.

Orzalesi, F. **Proliferodegenerative retinitis of the external layers.** Boll. d'Ocul., 1934, v. 13, July, pp. 833-874.

A boy of twelve years showed in the fundus a few greyish-green spots, with retinal blood vessels running over

them. Two spots, slightly elevated, of snow-white color as seen in Coats' disease, were present at the posterior pole and around the papilla, and also a large tumor-like elevation on the temporal side of the retina. No hemorrhages were visible. The histologic aspect of choroid, retina, and subretinal substance demonstrated that the three retinal lesions represented different stages of the same retinal disease. The author concludes that Coats' disease is to be considered a primary affection of the pigmented epithelium, a secretive, proliferative, and degenerative process with subretinal accumulation of an amorphous mass; and that Coats', Leber's and Hippel's diseases are to be considered as different evolutions of the same affection. (Bibliography, nineteen figures.) M. Lombardo.

Schoenberg, M. J. **An electrode which simplifies the technique of electrosurgical treatment of retinal detachments.** Arch. of Ophth., 1935, v. 13, Feb., pp. 252-253.

The electrode is made of stainless steel or platinum iridium and has two hooks 1.25 mm. long, which penetrate the sclera in an oblique direction to obviate sudden escape of fluid. A special advantage is facility in applying the electrode when tears are situated far back.

J. Hewitt Judd.

Sená, J. A. **External exudative retinitis (Coats). A contribution to its histology.** Arch. de Oft. de Buenos Aires, 1934, v. 9, Aug.-Sept., p. 387; also La Semana Med., 1935, 42nd year, Feb. 29, p. 596.

In a child of four years the glaucomatous eye was enucleated on suspicion of a glioma behind a detachment. The pathologist's report showed the retina three or four times its normal thickness, involvement mainly of the external layers with cavitation, proliferation and migration of pigment epithelium, and presence of cholesterin crystals. The exudate reached the optic nerve, which was massively infiltrated but showed no excavation. The choroid was not involved. The subretinal exudate contained the "spectral" cells of Coats, with numerous pigment granules. There were no true retinal aneurisms. (Photomicrographs, bibliography.) M. Davidson.

Walker, C. B. **Technique of multiple micropuncture for separated retina treatment; additional devices.** Sec. of Ophth., Amer. Med. Assoc., 1934, 85th session, pp. 35-53; also Amer. Jour. Ophth., 1935, v. 18, March, p. 246.

Whiting, Maurice. **Obstruction of the central artery of the retina with simultaneous hemiplegia.** Trans. Ophth. Soc. United Kingdom, 1934, v. 54, p. 270.

Obstruction of the central artery occurred in a doctor sixty years of age, and at the same time a transient right hemiplegia. Six weeks later the retinal arteries were completely fibrosed, showing as white streaks, and at no time was there any improvement in vision.

Beulah Cushman.

11. OPTIC NERVE AND TOXIC AMBLYOPIAS

Berliner, M. L. **Acute optic neuritis in demyelinating diseases of the nervous system.** Arch. of Ophth., 1935, v. 13, Jan., pp. 83-98.

This review presents the salient features in disseminated sclerosis, acute disseminated encephalomyelitis, neuromyelitis optica, and encephalitis periaxialis diffusa (Schilder's disease). Six illustrative cases are presented in detail. Special attention is called to the susceptibility of the visual pathways in all the so-called demyelinating diseases and to the fact that in certain instances these structures may be the only ones giving clinical evidence of the presence of these diseases. J. Hewitt Judd.

Brain, W. R. **Some varieties of acute optic and retrobulbar neuritis.** Trans. Ophth. Soc. United Kingdom, 1934, v. 54, p. 221.

Five forms of optic neuritis are described according to anatomic location: (1) papillomacular, (2) acute optic neuritis, (3) acute retrobulbar neuritis, (4)

chiasmal neuritis, (5) mixed forms. The clinical varieties and those associated with polyneuritis are described and differentiated. Beulah Cushman.

Fuchs, A. **Nyctalopia from tobacco amblyopia in chauffeurs.** Klin. M. f. Augenh., 1935, v. 94, March, p. 377.

A chauffeur, aged forty-five years, who daily smoked from four to five Virginia cigars, which are famous in Vienna for their high nicotine content, had vision of 5/36 and large central and paracentral scotomas for red. He drove the automobile very slowly by day, but rapidly at night, when his vision seemed to be relatively and absolutely improved. At the test chart, however, such changes in vision could not be demonstrated with varying illumination. C. Zimmermann.

Kravitz, Daniel. **Neuroretinitis associated with symptoms of ergot poisoning. Report of a case.** Arch. of Ophth, 1935, v. 13, Feb., pp. 201-206.

Ocular complications occur in mild cases of ergot poisoning and may consist of dilatation of the pupils, double vision, cataract, and inflammation and degeneration of the optic nerves. The case reported was that of an Italian woman aged twenty-two years, who took two pills of ergot of one grain each four times a day for four days. On the fifth day dimness of vision developed. Examination two months later revealed vision 20/200 in the right eye and 20/50 in the left. The discs were salmon-colored and were elevated about two diopters, the fields markedly contracted with absolute central scotoma. Examination a month later revealed progressing secondary optic atrophy, perivascular sheathing, and unchanged vision.
J. Hewitt Judd.

Mahoney, William. **Further notes on retrobulbar neuritis due to thallium poisoning.** Yale Jour. Biol. and Med., 1934, v. 6, July, p. 583.

Thirteen cases are reviewed. Visual acuity was greatly lowered in all cases and there were marked field defects, the commonest of which were bilateral central scotomata. All cases showed damage to the optic nerves but both subjective and objective improvement was noted after treatment in the majority of cases. Edna M. Reynolds.

Morax, V. **Bilateral retrobulbar neuritis after intravenous injection of alcohol in puerperal sepsis.** Ann. d'Ocul., 1935, v. 172, April, pp. 301-303.

A woman of twenty-five years was treated for severe puerperal sepsis by the intravenous injection of 200 c. c. of 33 percent ethyl alcohol. This was followed by gastric and visual disturbances. Vision has remained defective. Examination eighteen months after the injection demonstrated bilateral absolute central scotomata of ten to fifteen degrees on each side and slight pallor of the discs. The peripheral fields were nearly normal. Other cases treated in this manner have had no visual disturbances. Morax suggests the possibility that the mixture injected may have contained methyl alcohol.
John C. Long.

Plummer, F. C. **Hyalin bodies on the discs.** Brit. Jour. Ophth., 1935, v. 19, April, p. 215.

A boy aged ten years showed in both eyes marked "sago-grain-like" hyalin bodies, which overlapped the margins of the disc. Vision was normal, fields slightly but regularly contracted. The histories of the family and of the boy were negative. Parsons' "Pathology" seems to have the most exhaustive account of this condition.
D. F. Harbridge.

Rutherford, C. W. **Papilledema in undulant fever.** Jour. Amer. Med. Assoc., 1935, v. 104, April 27, p. 1490.

A summary of sixty-three cases of undulant fever showed that three had bilateral papilledema, increased pressure of spinal fluid, mononuclear pleocytosis, and evidence on which to base a diagnosis of infection of the central nervous system by some variety of the melitensis organism. Five cases were found in the literature with disc changes interpreted as papilledema. In

cases in which the symptomatology is indefinite and leading signs are absent the presence of papilledema should indicate consideration of undulant fever in diagnosis. George H. Stine.

Shumway, E. A. **Association of optic neuritis, facial paralysis, and facial hemiatrophy.** Arch. of Ophth., 1935, v. 13, Jan., pp. 8-13; also Trans. Amer. Ophth. Soc., 1934, v. 32, p. 353.

The subsequent history of a case reported in 1905 is presented with findings indicating that abscessed teeth were the etiologic factor in the production of the syndrome. The findings were postneuritic optic atrophy associated with recurrent attacks of facial palsy, some of which were preceded by pain, partial hemiatrophy and unilateral enophthalmos, loss of smell, and partial loss of taste. J. Hewitt Judd.

Velhagen, K. **The significance of the blind spot in the diagnosis of papilledema.** Zeit. f. Augenh., 1935, v. 85, March, p. 288.

Velhagen determined the size and shape of the blind spot in eighty-eight eyes of forty-six patients with typical or incipient papilledema. In eighty-six of the eyes the blind spot was enlarged. Records of the blind spot made from time to time are a reliable index of change in the affection of the optic nerves, and, together with inspection of the color of the nervehead and measurement of its protrusion, are of great value in prognosis.

F. Herbert Haessler.

Weill, G. **Serious ocular effects of inhalation of impure acetone.** Bull. Soc. Franç. d'Opht., 1934, 47th year, pp. 412-414.

General symptoms included fatigue, dyspnea, intense thirst, and somnolence. In some cases the patients required hospitalization. Vision was reduced to counting of fingers, and the pupils were dilated to 8 mm. The fundi were normal. A central scotoma could be demonstrated. The author believes methyl alcohol was the impurity that caused the retrobulbar neuritis.

P. J. Leinfelder.

12. VISUAL TRACTS AND CENTERS

Agnello, F. **Concerning a case of double hemianopsia with loss of macular vision.** Arch. di Ottal., 1935, v. 42, Jan.-Feb., p. 39.

Double hemianopsia was secondary to thrombosis of the two posterior cerebral arteries in a patient suffering with cerebral arteriosclerosis. The first attack, in 1929, produced left homonymous hemianopsia. Fifteen months later a second attack produced right homonymous hemianopsia with complete loss of macular vision. Theories are discussed. (Bibliography.)

Herman D. Scarney.

Brown, L. G. **Right frontal sinus suppuration with orbital abscess. Abscess of left frontal lobe producing bilateral visual defects.** Proc. Royal Soc. of Med., 1934, v. 27, July, p. 1284.

Because the sinus was large and overlapped the midline, the left frontal lobe came into relation with the suppurating sinus and a large abscess was located in the left frontal lobe. Ophthalmologic examination revealed loss of vision in the upper half of the right visual field, and an enlarged blind spot in the left eye. Both eyes showed papilledema and blurring of the disc margins. Recovery followed drainage of the abscesses, but the visual field defects were permanent.

Edna M. Reynolds.

Charlin, Carlos. **Complicated hysteric blindness.** Ann. d'Ocul., 1935, v. 172, April, pp. 293-300; also Arch. de Oft. de Buenos Aires, 1934, v. 9, Oct., p. 427, and Nov.-Dec., p. 492.

This paper closely resembles that published in the American Journal of Ophthalmology, 1933, v. 16, p. 683. (Illustrated.) M. Davidson.

David, M., and Hartmann, E. **Ocular symptoms in meningiomas of the lesser wing of the sphenoid.** Ann. d'Ocul., 1935, v. 172, March, pp. 177-212.

Twenty-six cases of meningioma of the lesser wing of the sphenoid are reported. Fundus changes were papilledema, optic atrophy, and the syn-

drome of Foster Kennedy. Symptoms included diminished central vision, loss of central color perception, hemianopsia, exophthalmos, diminution of corneal reflex, and paralyses of extraocular muscles. Roentgenographs were of some diagnostic and localizing value. Meningiomas are not malignant and do not recur if completely removed.

John C. Long.

Holloway, T. B. **The ocular manifestations observed in eighteen cases of intracranial adamantinoma.** Amer. Jour. Ophth., 1935, v. 18, March, pp. 230-238; also Trans. Amer. Ophth. Soc., 1934, v. 32, p. 311.

Penman, G. G. **The representation of the areas of the retina in the lateral geniculate body.** Trans. Ophth. Soc. United Kingdom, 1934, v. 54, p. 232.

Experiments were carried out on macacus rhesus monkeys, and histopathologic study made of the eyes and the geniculate bodies. The author demonstrated that crossed and uncrossed fibers of the optic tract terminate quite separately in different laminae. He states convincingly facts that confirm the original observations of Minkowski. The macula as a whole is not bilaterally represented in the geniculate body. Fibers from the nasal half of the macula undergo complete decussation in the optic chiasm, while those from the temporal half remain uncrossed. The nucleus is split up into six laminae, and the center receives fibers alternately from the retina of the same and of the opposite side. The fibers from the upper part of the retina go to the medial part of the geniculate body, those from below to its lateral part. The macular area is wedge-shaped, involves all the laminae, and is confined to the posterior two-thirds of the nucleus, broadening toward the caudal pole. It is probable that the peripheral areas remote from the disc are represented in the more anterior levels of the geniculate body. Beulah Cushman.

Steegmann, A. T., and Roberts, D. J. **Syndrome of the anterior choroidal artery.** Jour. Amer. Med Assoc., 1935, v. 104, May 11, p. 1695.

The syndrome of the anterior choroidal artery consists of hemiplegia, hemianesthesia, and hemianopsia contralateral to the side of the lesion. The syndrome is very rare. In the case reported the syndrome followed spontaneous subarachnoid hemorrhage in a seventeen-year-old boy. (Visual fields.)

George H. Stine.

Velhagen, K., Jr. **Sellar bridges.** Arch. f. Augenh., 1934, v. 108, Nov., p. 559.

Among one hundred skulls the author found ten with sellar bridges, bony or cartilaginous connections between the anterior and posterior clinoid processes. These are harmless accidental findings, but should be watched for possible pathologic significance.

R. Grunfeld.

13. EYEBALL AND ORBIT

Cordero, C. **Concerning a case of intermittent exophthalmos.** Arch di Ottal., 1935, v. 42, Jan.-Feb., p. 18.

A case is described. The author reviews the literature and methods of treatment. He regards the reported case as one of varicocele of the orbit. Treatment was refused. (Bibliography.)

Herman D. Scarney.

Donahue, H. C. **Two unusual cases of unilateral exophthalmos, one with optic atrophy.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 439-441.

Eagleton, W. P. **Exophthalmos from surgical diseases of the cranial cavity, the nasal sinuses, and the bony orbit, especially as to involvement of the protective retrobulbar space.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 81.

This is an exhaustive paper of considerable length with seventeen case reports, sixteen illustrations, and bibliography.

Manes, A. J. **Pulsating exophthalmos. Its surgical treatment.** Arch. de Oft. de Buenos Aires, 1934, v. 9, Oct., p. 455.

A case of spontaneous pulsating exophthalmos, with a history of two attacks of apoplexy in the anamnesis, responded well to a Sattler operation, with subsequent slow compression of the common carotid by ligature and injections of gelatin-serum. After six months the exophthalmos and the subjective bruit disappeared completely.
M. Davidson.

Mossa, G. **Neoplastiform myelosis with orbital complications and bilateral exophthalmos or histiocytomatosis?** Boll. d'Ocul., 1934, v. 13, Sept., pp. 1265-1285.

A girl of seven years had swelling of the right cheek with toothache and increased temperature, followed in a few days by convulsions, joint pains, paralysis of the right side, protrusion of the eyeballs, and edema of the discs. Death ensued. From the history, the postmortem examination, and the histologic findings it was not clear whether the case was one of histiocytomatosis or of neoplastic myelosis. (Bibliography, four figures.) M. Lombardo.

O'Brien, C. S., and Leinfelder, P. J. **Unilateral exopthalmos. Etiologic and diagnostic studies in eighty-two consecutive cases.** Amer. Jour. Ophth., 1935, v. 18, Feb., pp. 123-132; also Trans. Amer. Ophth. Soc., 1934, v. 32, p. 324.

Panneton, Philippe. **Cyst in the retrotarsal fold of the lower eyelid.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 458-459.

Pincus, Ludwig. **Primary fat necrosis (lipogranulomatosis) of the orbit.** Klin. M. f. Augenh., 1935, v. 94, March, p. 369. (Ill.)

A woman aged eighty-two years presented a pseudotumor of the right orbit. The immovable projecting eyeball was blind from cataract and peripapillary atrophy. The orbit was exenterated. The pseudotumor consisted of granulation tissue supplanting the orbital fat, and of numerous giant cells filled with products of fat disintegration. Lues and tuberculosis could be excluded. C. Zimmermann.

Plummer, W. A., and Wilder, R. M. **The etiology of exophthalmos: Constitutional factors with particular reference to exophthalmic goiter.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 41.

The explanation of any resultant exophthalmos in syphilis, tuberculosis, neurofibromatosis, xanthomatosis and other granulomatous conditions in the orbit, rickets, scurvy, the various forms of leukemia, and intraorbital hemorrhage is obvious. In nephritis, hypertension, and other conditions of so-called sympathicotonia, true proptosis is very unusual. The experimental production of exophthalmos is discussed. Clinical experience indicates that the immediate cause of exophthalmos in exophthalmic goiter is dependent on actual changes in the function of the thyroid gland. Seven tables aid in the discussion of clinical data. (Bibliography.) George H. Stine.

Reese, A. B. **The etiology of exophthalmos; complications; causes from primary lesions in the orbit; surgery.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 65.

Operations for cosmetic purposes, for protection of the cornea, for excision of a tumor, or for relief of pain in cases of exophthalmos are described and illustrated. Tumors may be removed as satisfactorily by transconjunctival approach as by the Krönlein method. The various types of tumor and pseudotumor are discussed. (Five illustrations, bibliography.)
George H. Stine.

Stilo, A. **Evolution and relations of the orbital fascia.** Rassegna Ital. d'Ottal., 1935, v. 4, Jan.-Feb., p. 3.

After description of the anatomy of the orbital fascia and a review of the literature, Stilo describes his studies of this structure. The development of the fascia is traced from the fetus of 49 mm. through the newborn and into adult life, by means of histologic prepara-

tions. The author concludes that the orbital fascia is a formation of the intracranial perimeningeal tissue which is prolonged into the orbit. One part is continued as the layer which participates in formation of the periorbita, the other, in relation to the optic nerve, folds upon itself and is continued as the epidural sheath of the nerve. The portion transformed into adipose tissue performs a mechanical function, in supporting and protecting the globe. (Nine figures.) Eugene M. Blake.

14. EYELIDS AND LACRIMAL APPARATUS

Anelli, D. **Permeability of the lacrimal passages in dacryocystitis.** Boll. d'Ocul., 1934, v. 13, Aug., pp. 1088-1097.

In one hundred cases of lacrimal affections there were only twenty of simple stenosis with epiphora and ten of dacryocystitis with mucous secretion which were permeable. None of the cases of dacryocystitis with purulent secretion showed any permeability.
M. Lombardo.

Hagedorn, A. **Chalazion-lipogranulomatosis.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 424-425.

Hildreth, H. R. **The external canthal ligament in surgery of the lower lid.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 437-439.

Hosford, G. N., and Hicks, A. M. **Hydrogen-ion concentration of tears. Its relation to certain ocular symptoms and to conjunctival and corneal lesions.** Arch. of Ophth., 1935, v. 13, Jan., pp. 14-25.

The authors review the previous work on determination of the hydrogen-ion concentration of tears. Determinations made with the Brown apparatus showed an average pH of 7.35. The tears are sufficiently buffered to permit a dilution of one to fifteen. The relation of hydrogen-ion concentration of the tears to certain bacteria and the therapeutic effect of buffered solutions are discussed. J. Hewitt Judd.

Jaensch, P. A. **Ptosis operation.** Klin. M. f. Augenh., 1935, v. 94, Feb., p. 183. (Ill.)

Jaensch discusses the drawbacks of the ptosis operations of Hess and Motais and the advantages of the operation of Blaskovics. His observations in nineteen patients convince him that the operation of Blaskovics is the procedure of choice in congenital and acquired paralysis of the levator and also in most cases of inflammatory ptosis.
C. Zimmermann.

Villani, G. **Experimental study on repair of wounds of the eyelids.** Boll. d'Ocul., 1934, v. 13, Aug., pp. 1016-1046.

The writer produced numerous wounds in the lids of rabbits, some transverse, others perpendicular to and reaching or including the margin, and some with triangular loss of substance. He gives a detailed description of the histologic changes which manifest themselves in the course of repair from the first to the tenth day, and he draws conclusions regarding the process in human beings. M. Lombardo.

Vittadini, E. **Cystic dilatation of the superior lacrimal canaliculus.** Ann. di Ottal., 1935, v. 63, March, p. 195.

A rare case of cystic dilatation of the superior lacrimal canaliculus is described. Histologic examination of the tumor particularly in relation to the morphologic aspect of the epithelium demonstrated such a resemblance to the crypts found in the lacrimal sac as to indicate a relationship between them. The author believes there was originally a small diverticulum from the lacrimal canal having the same epithelial investment as the canal itself. In this the secretions were retained until finally minute concretions were formed, causing sufficient irritation to induce development of atypical epithelium occluding the opening. The epithelium of the lacrimal canal consisted of cells in which protoplasm showed vacuolization with faintly colored nuclei, indicating degeneration of the mucous crypts. No opening was found leading

from the cyst. Various other hypotheses as to origin are discussed. (Bibliography.) Park Lewis.

15. TUMORS

Adson, A. W., and Benedict, W. L. **Hemangioepithelioma of the orbit. Removal through transcranial approach.** Sec. on Ophth., Amer. Med. Assoc., 1934, 85th session, p. 79. (See Amer. Jour. Ophth., 1935, v. 18, March, p. 294.)

Belgeri, F. **Malignant growths of the visual apparatus, their diagnosis and treatment.** Arch. de Oft. de Buenos Aires, 1934. v. 9, Nov.-Dec., p. 495; also La Semana Med., 1935, 42nd year, April 11, p. 1048.

Tendency to spread rather than histologic appearance is the criterion of malignancy. Tumors of the "external eye" and adnexa are reviewed. The characteristics of lid epitheliomata are emphasized. Electrocoagulation and radium and x-ray should be resorted to early and offer good prognosis.
M. Davidson.

Blagovechensky, M. N., and Morgenstern, Z. O. **Contribution to the study of intradural gliomas of the optic nerve.** Ann. d'Ocul., 1935, v. 172, Feb., pp. 129-141.

A case of intradural glioma of the optic nerve in a child of two years is reported. There were exophthalmos, total optic atrophy, and external strabismus on the affected side. The pupil of the blind eye reacted consensually to light and reacted to convergence. The swollen nerve was removed in its sheath by the Krönlein approach. The pathological findings are described in detail. John C. Long.

Casanonas J. **Melanoma of the caruncle.** Arch. de Oft. Hisp-Amer., 1935, v. 35, Feb., pp. 71-74.

A pigmented tumor of the caruncle grew for six months, attaining the size of a small pea. It was excised without recurrence. Microscopic examination revealed all the characteristics of a melanoma, with some zones in which malignant degeneration had started. The author emphasizes the necessity of removing these tumors at a very early stage. Ramon Castroviejo.

Damel, S. D., and Rodriguez, V. R. **Neurinoma of the orbit.** Arch. de Oft. Hisp-Amer., 1935, v. 35, Jan., pp. 1-14.

After a brief review of the literature the authors report one case. The patient, with marked exophthalmos and limitation of motion of the eye, was operated on by Krönlein's technique. Recovery took place without complications, and with good cosmetic and functional results. Microscopic examination led to diagnosis of neurinoma of the orbit, which probably had originated in one of the posterior ciliary nerves. (Bibliography, eleven illustrations.)
Ramon Castroviejo.

François, J. **Congenital and benign melanosis of the eye.** Arch. d'Opht., 1934, v. 51, Dec., p. 775. (Cont. from the Nov. issue.)

This is an apparently complete review of the literature on the subject. Differential diagnosis is considered. Visual acuity, fields of vision, light sense, and color sense are not affected. It is most often unilateral. Histologic studies were made in nine cases. These included involvement of the sclera, cornea, uvea, retina, optic nerve, orbit, conjunctiva, and lids. Heredity plays an important part. Progression of melanosis is rare and unimportant. Malignant evolution is a rare possibility according to the author, who reasons that although melanosarcoma has been found in a melanotic eye and not in its normal fellow, and not vice versa, it does not do to exaggerate this fact. The number of melanosarcomas occurring in melanotic eyes is very small, but they have attracted attention because of their importance, whereas observations of simple ocular melanosis have not always been reported. This would lead to statistical errors. Besides, authors who have seen many melanosarcomas have only seen a few which accompanied abnormal ocular pigmentation. Fuchs, for example, saw only three cases of melan-

osis in 281 cases of melanosarcoma. (Bibliography.) Derrick Vail.

Goldstein, I., and Wexler, D. **Metastasis in the choroid from adenocarcinoma of the testis.** Arch. of Ophth., 1935, v. 13, Feb., pp. 207-211.

Metastatic carcinoma of the choroid has as its most frequent primary source the female breast and next in order the lung and stomach. A case is reported of a child of four years which eighteen months previously had had a right orchidectomy because of adenocarcinoma. The patient developed lung symptoms, lymph node enlargement, and retinal detachment (right eye). Post-mortem examination showed a carcinoma of the choroid filling the temporal two-thirds of the vitreous. (Photomicrographs.)

J. Hewitt Judd.

Hagedoorn, A. **Adenocarcinoma of a meibomian gland.** Arch. of Ophth., 1934, v. 12, Dec., pp. 850-867.

About sixty previously reported tumors of the meibomian gland are summarized. The frequency and malignancy of these growths can hardly be estimated because the diagnosis may be easily missed in the early stages. The author reports the case of a man aged sixty-six years who presented a tumor on the left upper lid of two years duration. This was removed radically, with plastic restoration of the eyelid. There was no local recurrence but four years later metastasis was found in the parotid and supraclavicular glands. The patient died four months after removal of these. The histologic findings upon which the diagnosis is based are described minutely and illustrated by photomicrographs. The tumor consisted of the cells of a sebaceous adenoma mixed with small islands of pavement cells, horny pearllike structures and cells producing keratohyalin.

J. Hewitt Judd.

Jones, A. C. **Oil cyst of the orbit with carcinomatosis.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 240.

A woman aged fifty-three years was operated upon for removal of an orbital tumor. A cyst was exposed. Difficulty of manipulation caused rupture of the cyst with escape of dark oily fluid. Pathologic examination revealed squamous cell carcinoma. Exenteration of the orbit was refused and radium to the amount of 23,900 hours was used with but little effect. Proptosis recurred. A cancer quack succeeded in removing the entire side of the face, including the nose and ear, with an arsenical paste. The patient died seven months later with generalized carcinomatosis. (Bibliography, discussion.)

George H. Stine.

Kirwan, E. W. O'G. **Orbital teratoma.** Brit. Jour. Ophth., 1935, v. 19, April, p. 201.

The author was able to find in the literature only twelve examples of this rare form of tumor. It is congenital and grows very rapidly. At times it occurs in the form of a cyst. The writer's patient was a female observed one week after birth. The baby was up to normal size and weight. From the left orbital cavity protruded a red mass the size of an ordinary tomato. In the middle of the mass was the anterior half of the eye, the posterior half being buried. Exenteration of the orbit was carried out. The child was alive and well two years later. Pathological examination showed the different types of tissue originating in the three germinal layers, namely, cartilage, nerve, lymphoid tissue, fat, involuntary and heart muscle, skin, hair follicles, vascular tissue with melanoblasts, small intestines, liver, and parathyroid. (Eight photomicrographs, three plates, bibliography.)

D. F. Harbridge.

LeFever. C. W. **Argyll Robertson syndrome occurring with pituitary tumors.** Amer. Jour. Ophth., 1935, v. 18, May, pp. 442-446.

MacCallan, A. F., Cade, S., and King, E. F. **Bilateral glioma of retina; radium treatment; pathological findings.** Trans. Ophth. Soc. United Kingdom, 1934, v. 54, p. 201.

The left eye was removed in July, and the following September glioma in the right eye was diagnosed. Radium was implanted in the recurring tumor in the left orbit, and surface irradiation was used in the right eye. The following June the child died. There were three separate foci of glioma growing from the retina. The authors conclude that interstitial irradiation of the gliomatous mass in the left orbit resulted in marked shrinkage, whereas the surface irradiation seemed to have no effect. Beulah Cushman.

Michaïl, D. **Primary sarcoma of the inferior oblique muscle.** Arch. d'Opht., 1934, v. 51, Dec., p. 755.

An otherwise healthy girl aged ten years had a painless swelling of the left lower lid of a month's duration. The tumor increased in size diminishing the palpebral fissure at the same time. Blood Wassermann and sinuses were negative. Palpation revealed a hard pseudofluctuant tumor, ovoid horizontally, adherent to the internal half of the orbital floor in the immediate neighborhood of the nasolacrimal canal and inferior orbital margin. It extended deeply under the eyeball, displacing it upward obliquely 20°. Ocular movements, vision, and fundus were normal. At operation the nodule, 2 by 1 cm., was adherent to the periosteum on the nasal side, continuing into the tendon of the inferior oblique muscle, otherwise of normal appearance and insertion. Microscopic examination revealed a large round-cell sarcoma, with fingerlike projections extending between the muscle fibers. Only five other cases of primary sarcoma of the ocular muscles have been found in the literature. Ocular motility was normal in all save one. None recurred or metastasized after extirpation, or after partial or total orbital exenteration. (Bibliography.)
Derrick Vail.

Morax, V., and Rousseau, F. **A case of orbital neoformation of difficult interpretation.** Ann. d'Ocul., 1935, v. 172, Jan., pp. 41-55.

Swelling of the left lid developed in a girl of eleven years after an acute infection diagnosed as grippe. The swelling became slowly more pronounced and exophthalmos, corneal ulceration, and fixation of the globe appeared. There was no reduction in swelling after x-ray therapy. Eighteen months after onset the left orbit was exenterated. Cultures and animal inoculations from the excised tissue gave negative results. Microscopic examination showed extensive lymphocytic infiltration and the presence of plasma cells, eosinophiles, and a few giant cells. There were numerous vasculonervous bundles containing arterioles and amyelinated nerves. The condition may have been either chronic inflammation or an angioneuroma. John C. Long.

Panico, E. **Biomicroscopy of tumors of the eye.** Boll. d'Ocul., 1934, v. 13, June, pp. 701-724.

The author gives a detailed description of the benign and malignant tumors of the different structures of the eye from the palpebral margin to the choroid and retina, as seen with the slit-lamp. For examination of the internal tumors he uses a contact glass on the patient's eye and a mirror attached on the arm of the lamp. Biomicroscopy enabled the writer to diagnose the true nature of the tumors and to understand their morphologic and genetic varieties. (Bibliography, seventeen colored figures.) M. Lombardo.

Schmidt, Rolf. **An epithelial tumor of the iris.** Arch. f. Augenh., 1934, v. 108, June, p. 457.

A sixty-year old patient had been admitted for cataract operation. The upper periphery of the iris showed a small, greyish-brown tumor of the size of a pinhead. There were no signs of inflammation or atrophy. The tumor was excised. It was a spongy dark brown tissue, a benign and very slowly progressing melanoma, taking its origin from the retinal epithelial layer of the iris. No recurrence has been noted in the course of a year. R. Grunfeld.

Tajkef, L. **Plasmocytoma of the conjunctiva.** Ann. d'Ocul., 1934, v. 171, Nov., pp. 934-944.

In a woman of sixty years an extensive plasma-cell tumor of the lids and conjunctiva had begun to develop eight years before and had slowly progressed. Two years after onset biopsies showed marked lymphocytic infiltration of the conjunctiva. Biopsies six years later showed a plasma-cell tumor with relatively few lymphocytes. There is a detailed discussion of the cytology with a review of the literature.

John C. Long.

Terry, T. L. **Sarcoma of eyelid. Metaplasia of leiomyosarcoma to round-cell sarcoma after repeated attempted excisions.** Arch. of Ophth., 1934, v. 12, Nov., pp. 689-692.

These cell changes, observed in the case of a woman aged fifty-one years, are shown by drawings from tissue excised at four successive operations. The patient died four months after the nodule was first noticed in the right upper lid. A necropsy was not obtained. The author believes the tumor originated from Müller's muscle.

J. Hewitt Judd.

Tiscornia, A., and Tiscornia, B. J. **Epibulbar epithelioma.** Arch. de Oft. de Buenos Aires, 1934, v. 9, Nov.-Dec., p. 541.

A large epibulbar epithelioma simulated a sarcoma because of its rapid evolution. (Photomicrographs.)

M. Davidson.

Viallefont, H. **Ocular manifestation of xeroderma pigmentosum.** Arch. d'Opht., 1935, v. 52, Jan., p. 32.

There was a small tumor in the temporal region at the limbus of the right eye of a young girl. In three weeks it had reached the size of a small bean. Excision and microscopic study revealed a papillo-spino-cellular epithelioma. An older brother had had the same condition years before. The author reviews the literature thoroughly and concludes that heredity and actinic rays are important factors. (Bibliography.)

Derrick Vail.

Weekers, L., and Lapierre, S. **Treatment of angioma of the lids by sclerosing injections.** Arch. d'Opht., 1935, v. 52, Jan., p. 14. (See Amer. Jour. Ophth., 1935, v. 18, March, p. 296.)

16. INJURIES

Benedict, W. L. **Crochet hook through both orbits.** Jour. Amer. Med. Assoc., 1935, v. 104, Feb. 2, p. 395.

An insane woman drove a number twelve crochet needle into her right temporal region and through both orbits. Removal of the needle through the left temporal area was followed by uneventful recovery without loss of vision or disturbance of ocular motility. (One figure.)

George H. Stine.

Castelli, A. **Ophthalmozoosis endemica from "Paederus."** Ann. di Ottal., 1935, v. 63, March, p. 204; Apr., p. 241.

This study, which received the Cirincione international prize of 1933 for original research, treats of a form of palpebral, conjunctival, and corneal inflammation caused by contact with the poison of a coleopterous insect which was classified by a capable entomologist as of the family staphilinidae and more exactly "Paederus fuscipes," a red-orange insect about 7 mm. long somewhat resembling a flying ant. From two small glands situated near the anus of the insect an irritating substance is excreted. In the bulbar conjunctiva or on the lids injection and slight edema appear one or two days after the insect touches the skin. The corneal epithelium is raised and later denuded. Serious involvements rarely follow. The habitat of Paederus is widely distributed. It is found where warm humid atmospheric conditions prevail.

Experimentation demonstrated that the effect produced by the insect was purely chemical, arising from a substance which was soluble in chloroform, ether, alcohol, or olive oil, but was insoluble in water. Biomicroscopic examination showed the pathognomonic lesion to consist of a bleb, alike on cornea, conjunctiva, and eyelid. (16 photographs, 12 photomicrographs.)

Park Lewis.

Cordes, F. C., and Harrington, D. O. **Bilateral absorption of intraocular copper with chalcosis in one eye.** Amer. Jour. Ophth., 1935, v. 18, April, pp. 348-352.

Duverger. **The emergency treatment of ruptured wounds of the eyeball.** Arch. d'Opht., 1935, v. 52, Jan., p. 5.

These wounds, which are due to violent pressure on the eyeball, are usually ruptures of the sclerotic. They almost always occur in the anterior segment 1 to 2 mm. from the limbus, rarely in the posterior segment not far from the papilla. These last are not amenable to surgical treatment. The author has revised his previous stand of not operating when the conjunctiva is intact, and now believes that all cases must be sutured carefully and skilfully with fine silk, after any other necessary procedures such as cleasing the wound, removing a dislocated lens, excising a prolapse of the iris, or using dull red cauterization of the prolapsed portion of the ciliary body. He describes his technique. Derrick Vail.

Engelking, E. **Ophthalmologically important roentgen lesions of the fetus after radiation of pregnant mothers.** Klin. M. f. Augenh., 1935, v. 94, Feb., p. 151. (Ill.)

In the second and third months of pregnancy a woman was treated with roentgen rays on account of inflammation of the right broad ligament and a supposed myoma, the diagnosis of which, however, later proved erroneous. At the normal birth, the parents noticed that the head and eyes of the child were too small. Engelking examined the child at the age of seventeen months and found bilateral microphthalmos, insufficient development of iris, cataract, chorioretinitic changes, typical microcephalos, and retarded physical and mental development. He feels no doubt as to the etiological influence of the roentgen radiation of the pregnant uterus. While he could not find such a connection in a case of ocular changes in a child whose mother had received roentgen treatment of the left breast during pregnancy, he assents to the possibility of indirect injury of the fetus by roentgen rays applied to parts of the maternal body distant from the uterus. C. Zimmermann.

Franceschetti, A. **A new method for x-ray localization of intraocular foreign bodies.** Bull. Soc. Franç. d'Opht., 1934, 47th year, pp. 230-246.

The author describes the Comberg method. Roentgenograms are taken in anteroposterior and lateral positions, the position of the eye being marked by an especially constructed contact glass. The advantages of the method are simplicity and inexpensive equipment. For small foreign bodies Vogt's nonskeletal method is used, a dental film being inserted in the lower cul-de-sac and exposure made from above, and a second film being placed nasally and exposure made from the side.

P. J. Leinfelder.

Gasteiger, H., and Grauer, S. **The effect of fractional x-ray treatment upon the rabbit's eye.** Arch. f. Augenh., 1934, v. 108, Nov., p. 498.

Loss of cilia, conjunctivitis, cataract, and degenerative changes in the corneal epithelium and the retinal ganglion cells were observed, so that this method of treatment does not seem to be altogether harmless. An eighty-one-year-old patient, whose maxillary sarcoma broke into the orbit via the nose, had been treated with fractional x-ray doses for five months until her death. Her eye showed no harmful changes.

R. Grunfeld.

Levine, J. **The composition and magnetic qualities of the various forms of steel commonly used in industry.** Arch. of Ophth., 1934, v. 12, Dec., pp. 912-913.

Two out of twelve samples were found to contain ten to fourteen percent of manganese and were only slightly magnetic. These are used for street railway track work. The others showed equally a strong and quick attraction. The purest iron composition was found in the types used for hammers and chisels and for rail steel. Hence these should produce siderosis most rapidly.

J. Hewitt Judd.

Lijo Pavia, J. **Concerning projectiles lodged in the neighborhood of the orbit.** Rev. Oto.-Neuro-Oft., 1934, v. 9, Dec., p. 395.

In an attempt at suicide the bullet entered the right auditory canal and lodged below the orbital roof. Six hours later ptosis and immobility of the right globe appeared. Exposure of the cornea showed rapid evidence of a neuroparalytic keratitis, which is explained by involvement of the sphenoidal fissure. The ptosis is explained by an intraorbital hematoma. In this connection the author reports a case, recently reexamined, of an intraorbital bullet retained for ten years within the muscle cone and well tolerated as far as motility was concerned, although there was optic atrophy. M. Davidson.

Lustig, A. **Effects of war gases on the eye.** Boll. d'Ocul., 1934, v. 13, May, pp. 683-695.

The author mentions the different lacrimogenic and asphyxiating gases used during the World War by the different nations, the limit of tolerance to each in 1 c.c. of air, and their eye symptoms, which vary from simple congestion or edema of the conjunctiva to the sloughing and perforation of the cornea and serious lesions of retina and optic nerve. He mentions the treatment to be instituted in such cases.

M. Lombardo.

Mendez, Enrique. **Ophthalmias provoked by emanations from fermentation of maize (corn) in the presence of sea water.** Arch. Uruguayos de Med., Cir., y Espec., 1935, v. 6, Feb., pp. 197-218.

A Greek ship loaded with corn was shipwrecked near Montevideo. The port authorities undertook to lighten the cargo with a view to salvaging the ship. Twenty-one laborers developed temporary blindness. The symptoms included pain, photophobia, lid spasms, slight lid edema, redness and edema of the conjunctiva, yellowish secretion, clouding and discrete desquamations of the cornea, and congestion of the iris. With the exception of one, who required fifteen days, the patients all recovered within from three to five days. The symptoms began to show themselves after four or five hours labor in the vitiated atmosphere, and reached their maximum within ten to fifteen hours. The upper respiratory passages were also attacked, there being cough, sneezing, and nasal discharge. Some patients had gastrointestinal pains and diarrhea for a day or two. A chemical investigation showed the storerooms to contain 0.224 liters of sulphuretted hydrogen gas per 1,000 liters of atmosphere. The disturbance was attributed to butyric acid fermentation. No similar record could be found in the literature, but a similar experience was said to have occurred some years earlier after a wreck in the Rio de la Plata. The author continues his paper with a detailed consideration of gaseous chemical irritants, especially war gases. (Bibliography.) W. H. Crisp.

Neuschuler, I. **Allergic blepharoconjunctivitis from cosmetics.** Boll. d'Ocul., 1934, v. 13, Aug., pp. 1088-1110.

A woman of thirty-five years had edema of the lids with vesicles and intense itching, injected and chemotic conjunctiva, lacrimation, and photophobia. She had been using some cosmetics for the lashes and eyebrows. Three other patients suffered with the same symptoms from the same cause. The writer believes this blepharoconjunctivitis represents an angioneurotic disturbance caused by a neurovegetative derangement from a slowly acquired allergy. M. Lombardo.

Sala, G. **Ocular chalcosis with special regard to the biomicroscopic aspect of copper cataract.** Boll. d'Ocul., 1934, v. 13, Aug., pp. 1047-1062.

A boy of fourteen years, who had sustained an accident to both eyes by explosion of a cartridge, showed marked pericorneal injection of the right eye and other symptoms of acute iridocyclitis. The other eye, with normal vision, showed copper cataract, and the fluid vitreous showed numerous pink dustlike particles. X-ray revealed

the presence of a metallic foreign body in the right eye only, but an opacity of the cornea of the left eye demonstrated that the eye had been penetrated by a small splinter. The intraocular presence of copper varies in its effect according to the size of the splinter. M. Lombardo.

Sgrosso, S. **The pathogenesis of traumatic lesions in relation to the so-called Frenkel syndrome of the anterior segment of the eye.** Boll. d'Ocul., 1934, v. 13, May, pp. 521-537.

The author applies the known principles of hydrostatics and hydrodynamics to the mechanism of bulbar contusions, coming to the following conclusions: Considering that the ocular spheroid rests on elastic and soft tissue as to its posterior two-thirds, deformation of the bulbar surface must take place in its anterior segment. Severe traumas will cause detachment of the iris, changes of position of the zonulolenticular system, or even rupture of the globe. The mechanism of indirect trauma is the same as of direct and the effect the same if acting with sufficient force. Contusion acting in an oblique direction will have its effect at the base of the iris and at the zonula so that it may produce severer lesions than if acting perpendicularly. (Table, twelve figures.) M. Lombardo.

Stieren, Edward. **Sarcoma of the uveal tract following trauma.** Sec. on Ophth., Amer. Med. Assoc., 1934, 85th session, pp. 149-155. (See Amer. Jour. Ophth., 1934, v. 17, Nov., p. 1092.)

Swab, C. M. **Ocular lesions resulting from thallium acetate poisoning as determined by experimental research.** Sec. on Ophth., Amer. Med. Assoc., 1934., 85th session, p. 63. (See Amer. Jour. Ophth., 1935, v. 18, March, p. 297.)

Tooke, F. T. **Three unusual cases of foreign bodies in and about the eyeball.** Trans. Amer. Ophth. Soc., 1934, v. 32, pp. 163-169. (See Amer. Jour. Ophth., 1935, v. 18, March, p. 297.)

Villard, H. **The eye and sports.** Bull. Soc. Franç. d'Opht., 1934, 47th year, pp. 443-450.

The author considers many sports which may be responsible for ocular injuries, including motoring, hunting, target practice, fishing, mountaineering, skiing, football, tennis, boxing, and fencing. P. J. Leinfelder.

17. SYSTEMIC DISEASES AND PARASITES

Anderson, W. B. **Ophthalmomyiasis interna: case report and review of the literature.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 218.

A foreign body identified as a fly larva occurred in the vitreous of a forty-six-year-old patient. This case and that of de Boe, who has reported the only other cases known to have occurred in North America, differ from all cases reported in the European literature in that both the American cases were in adults, while all of the European cases were in children. European writers have stressed the idea that the sclera of the adult was too resistant for the penetrating organs of the offending larva. The present case is also different from all previous cases reported in that there was no damage to the eye, and that surgical intervention was unnecessary. (Three figures, two tables, bibliography, discussion.) George H. Stine.

Bailliart, P. **Arterial spasm in ocular pathology.** Bull. Soc. Franç. d'Opht., 1934, v. 47, pp. 370-375.

Partial and complete arterial spasms do exist, and are contributory to the symptoms in nephritis, hypertension, and glaucoma. P. J. Leinfelder.

Biozzi, Giuseppe. **Ocular changes from asphyxia. The experimental cataract of asphyxia.** Graefe's Arch., 1935, v. 133, p. 423.

Slow and sufficiently prolonged asphyxia through exclusion of air causes in rats immediate constant or transient ocular changes. The latter are congestion of the uveal blood vessels (especially those of the iris), and in less degree congestion of the retinal blood

vessels. In the aqueous humor, an increase in the protein content occurs as well as the appearance of blood cells in greater or less amount. A lens opacity or cataract from asphyxia is noted. All these ocular changes are characterized by rapid and complete reversibility: this peculiarity is subordinate to regression of general disturbances. The lens opacity is apparently caused by uncompensated acidosis, which appears during and after the asphyxia.

H. D. Lamb.

Cusumano, A. **Focal infections and secondary localization in the eye.** Rassegna. Ital. d'Ottal. 1935, vol, iv, Jan.-Feb., p. 46.

The author conducted experiments to determine the behavior of streptococcus viridans and staphylococcus aureus, cultivated in vivo, with numerous passages from eye to eye in rabbits and through several days, attempting to confer upon these organisms an elective tropism toward the same organs in healthy animals. The results of the experiments demonstrate that the various germs are distributed to diverse organs, eye, liver, kidney, and spleen, but more particularly the eye. This occurred with the streptococcus only when cultivated in brain broth.

The experiments thus demonstrate a certain elective affinity by the germs, after a period of time, for the organs from which they are derived. Such organotropism is not absolute. Histologic findings in the ocular tissues do not show corresponding changes. These findings are not in agreement with Rosenow and his pupils.

Eugene M. Blake.

François, Jules. **Bacillus subtilis in ocular pathology.** Bull. Soc. Franç. d'Opht., 1934, 47th year, pp. 423-437.

Bacillus subtilis is generally considered saphrophytic but is frequently pathogenic to the eye. The author observed a case of conjunctivitis from which he obtained the bacillus in pure culture. Experimentation with rabbits resulted in the production of conjunctivitis, keratitis, iritis, and panophthalmitis. The literature is reviewed and an extensive bibliography is given.

P. J Leinfelder.

Kofoid, C. A., and Williams, O. L. **The nematode Thelazia californiensis as a parasite of the eye of man in California.** Arch. of Ophth., 1935, v. 13, Feb., pp. 176-180.

The authors report removal of three nematode worms from the conjunctiva of a practicing California physician. They were identified as belonging to the genus Thelazia which occurs as a natural parasite in the conjunctival sac and on the surface of the eyeball of certain mamals and birds. The life history of this nematode is unknown but an intermediate arthropod host is suspected. Dogs and cats may act as a possible reservoir host for this parasite.

J. Hewitt Judd.

Krasso, Ilona. **Diagnosis and treatment of tuberculous affections of the eye with subconjunctival injections of tebeprotein.** Zeit. f. Augenh., 1935, v. 85, March, p. 271.

There is no constant relationship between the Mantoux reaction which indicates the general allergic state of the body and the allergy of the eye. In a series of patients with tuberculous eye affections, Krasso injected subconjunctivally without local anesthesia a small part of that dose of tebeprotein which had been found to produce a small reaction when injected intradermally in the same patient. An episcleral lesion which consisted of round-cell infiltration or of tuberculous tissue developed in tuberculous eyes. A prompt therapeutic effect followed most of the injections. One, two, or at most three injections sufficed to bring about the result that might be expected from months of the usual specific treatment. It is striking how different the reactions may be to intradermal and subconjunctival injections.

F. Herbert Haessler.

Lazarescu, D., and Lazarescu, E. **Progressive facial hemiatrophy.** Ann. d'Ocul., 1934, v. 171, Dec., pp. 1004-1011.

A man of seventy-six years had re-

ceived a blow on the side of the head when five years old and the atrophy had dated from that time. There was marked atrophy of the tissues of the right side of the face, with enophthalmos of 5 mm. of the right eye, the cornea slightly cloudy and the corneal reflex absent, the right pupil fixed to light, and both lenses cataractous. There was hyperirritability to electrical stimulation of the facial muscles of the right side. There was no reaction of degeneration. John C. Long.

Marchesini E., and Papagno, M. **Clinical and pathologic contribution to ocular manifestations of experimental beri-beri in birds.** Ann. di Ottal., 1935, v. 63, Feb., p. 81.

Fourteen young pigeons were given a vitamin-B-free diet, being fed exclusively on polished rice. The ocular symptoms included diminished sensibility of cornea and conjunctiva, limitation of internal and external motor functions, ascending granular fatty degenerative processes in chiasm and optic nerves, and consecutive fatty degeneration of nerve fibers. The retina showed mild degenerative changes in the nerve cells, with slight disturbance of the pigment layer between the rods and cones under the action of light. (Bibliography.) Park Lewis.

Rabinovitch, V., and Vengrjenovsky, G. **On a case of progressive myasthenia with participation of the ocular smooth muscles.** Arch. d'Opht., 1935, v. 52, Jan., p. 14.

While progressive myasthenia is considered a disease primarily of the striated muscles, cases have been described affecting the smooth muscles of the urinary vesicle and the intrinsic ocular muscles. The authors present a case with ptosis, paralysis of accommodation, facial weakness, weakness of convergence and an abnormal fatigability of all the ocular muscles. The immediate cause of the trouble is a disorder of sympathetic innervation. The spasm of accommodation is considered due to the extreme fatigability of the ciliary muscle, producing cramp. (Bibliography.) Derrick Vail.

Sabbagh, M. **The first case of ocular myiasis in Syria due to oestris ovis.** Ann. d'Ocul., 1934, Dec., v. 171, pp. 1016-1018.

A gendarme experienced the sensation of an ocular foreign body after having got dust in the eye twenty-four hours before. There was slight edema and congestion of the lids and conjunctiva. Nine larvae of the oestris ovis fly were found beneath the upper lid. Removal of the larvae resulted in cure. John C. Long.

Saint Martin, de. **Two ocular manifestations of dental origin.** Bull. Soc. Franç. d'Opht., 1934, 47th year, pp. 415-422.

In the first case loss of vision due to papillitis in the right eye improved after extraction of a diseased left upper first molar. In the second case transient attacks of blindness of the right eye due to spasm of the retinal arteries (seen ophthalmoscopically by the author) were ameliorated by removal of an infected right upper first molar. P. J. Leinfelder.

Tertsch, Rudolph. **The behavior of the leucocyte count under the influence of the Japanese tuberculosis-antigen AO as a means of determining the state of immunity.** Zeit. f. Augenh., 1935, v. 85, March, p. 314.

Yoshida counts the leucocytes in the peripheral blood before an injection of AO, and again 30, 60, 90, and 120 minutes after, and from the leucocyte reaction draws conclusions as to tuberculous etiology and degree of activity of a lesion. Tertsch, after a review of the literature and some experiments of his own, finds that a variation of $\pm$ 15 percent in the number of leucocytes takes place spontaneously. He differs from Yoshida in interpretation on two points. He considers of significance only changes of leucocyte numbers greater than 15 percent, and instead of evaluating absolute changes in the leucocyte number after injection, he records a percentage change.

He also doubts the specific diagnostic value of the test when interpreted as

Yoshida does, but suggests his own interpretation of the leucocyte curve, which he thinks gives the procedure practical applicability. If a specific antigen to which the body has become reactive is introduced, the defensive mechanism of the body is immediately stimulated, and one of the reactions is the wandering of the leucocytes. The state of defense is dropped as soon as the antagonist is overcome or if it overcomes the defense. The nontuberculous patient as well as one in a state of allergy in respect to tubercle antigen will therefore show no reaction in his leucocyte curve.

F. Herbert Haessler.

Tita, C. **A case of subconjunctival cysticercus.** Boll. d'Ocul., 1934, v. 13, Aug., pp. 1016-1046.

A girl of five years presented a cysticercus cyst the size of a pea on the nasal side of the left eyeball, between the plica and the internal canthus, and adherent to conjunctiva and episclera. A microscopic description of the cysticercus is given. Local and general eosinophilia substantiate the hypothesis that the cysticercus affects ocular structures not merely as an inert foreign body but also by the production of specific toxic substances. (Bibliography, two figures.) M. Lombardo.

Urbanek, J. **Allergic diseases of the eye.** Rev. de Ophth. de São Paulo, 1934, v. 4, Dec., p. 3. (See Amer. Jour. Ophth., 1935, v. 18, Jan., p. 97.)

Vogt, A. **Senescence of the eye.** Ann. d'Ocul., 1935, v. 172, Feb., pp. 106-119.

The appearance of senescence is dependent upon vitality, which is conditioned by heredity in the protoplasm. The time of onset of senile changes varies in different species, individuals, organs, and tissues. No organ escapes senile changes but some organs experience these changes earlier than others. The development of lenticular opacities is comparable to the graying of hair, the wrinkling of skin, and other manifestations of age. Ninety percent of people over sixty years of age show lens opacities. The various medical treatments for senile cataracts are without effect and their apparent success is due to faulty observation. John C. Long.

Weil, P. E., and Morax, P. **Visual disturbances occurring in Biermer's anemia without hemorrhages.** Ann. d'Ocul., 1935, v. 172, Feb., pp. 120-129.

A case of sudden blindness is reported in a woman of forty-three years. The patient had been suffering from pernicious anemia for two years and was considerably improved by liver therapy. She suddenly lost light perception in both eyes from no apparent cause. The pupillary reflexes and fundi were normal. Within a few hours light perception developed. Neurologic examination was negative. The red blood count was 2,300,000 cells. A blood transfusion was given twenty-four hours after the visual disturbance began, and there was gradual improvement. Right homonymous hemianopsia involving the inferior quadrants was demonstrable. Four injections of acetylcholin were given. Fifteen days after the blindness developed the visual acuity and the visual fields were normal.

John C. Long.

18. HYGIENE, SOCIOLOGY, EDUCATION, AND HISTORY

Alvaro, M. E. **Organization of classes for amblyopes.** Rev. de Ophth. de São Paulo, 1934, v. 4, Dec., pp. 38-44.

After a discussion of the problem as dealt with in various European countries, the author states that a beginning in this direction has recently been made in the Brazilian city of São Paulo, where, the government having authorized expenditure for the teaching of inmates of an infirmary, it has been decided to conduct the education of these children in accordance with the usual rules for sight-saving classes.

W. H. Crisp.

Brown, E. P., and Post, L. T. **Social service in ophthalmology.** Amer. Jour. Ophth., 1935, v. 18, Feb., pp. 119-122; also Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 278.

Fischer, I. **A contribution to the early history of Viennese eye clinics.** Zeit. f. Augenh., 1935, v. 85, March., p. 326.

Fischer describes the resistance which was evident in academic circles against the establishment of eye clinics, ophthalmology as a separate academic subject, and professorships of ophthalmology. He quotes Beer's description in 1798 of the private five-room eye clinic which he established for the care of free and paying patients and for the teaching of ophthalmology.

F. Herbert Haessler.

Fuchs, A. **Ophthalmologic and medical observations in the tropics.** Klin. M. f. Augenh., 1935, v. 94, Feb., p. 244. (Ill.)

On his travels Fuchs had in view three subjects for study: the special distribution, which he would call the geography, of eye diseases; those peculiar to the tropics; and the climatic influences on familiar ocular affections, such as trachoma, cataract, glaucoma, etc. He found avitaminosis to be one of the most interesting chapters of tropical ophthalmology; also the parasitic diseases. C. Zimmermann.

Klenova, E. **Visual acuity in distinguishing white objects upon a black background and its dependence upon intensity of light.** Graefe's Arch., 1935, v. 133, p. 402. (See Amer. Jour. Ophth., 1935, v. 18, May, p. 498.)

Leoz, G. **Cajal is dead.** Arch. de Oft., Hisp.-Amer., 1934, v. 34, Dec., pp. 642-661.

The author reviews in some detail the work of Cajal on degenerative processes of the optic nerve and retina. (Four illustrations.) Ramon Castroviejo.

Marquez, M. **Something about Cajal.** Arch. de Oft., Hisp.-Amer., 1934, v. 34, Dec., pp. 637-641.

This short biography of Ramon y Cajal mentions some of the outstanding publications of the Spanish histologist.

Ramon Castroviejo.

Onfray, R., and Petit, P. J. **Color vision and safety.** Ann. d'Ocul. 1935, v. 172, March, pp. 213-221.

This is a discussion of color vision in relation to interpretation of traffic signals. From a practical viewpoint defective color vision may be divided into two types, that of Dalton or red-green confusion and that of Rayleigh in which all colors are seen but with abnormal interpretation of luminosity. The latter condition is the more important. Various methods of color testing are discussed. The use of the pseudo-isochromatic plates of Ishihara is the most reliable method. By use of them about five per cent of persons tested show defective color vision.

John C. Long.

Shoji, Yoshiharu. **Motion picture photography of ophthalmic operations.** Ann. d'Ocul., 1934, v. 171, Dec., pp. 1011-1016.

A technique of motion picture photography for ophthalmic operations is described. The camera with telescopic lenses is suspended with the operation lights from the ceiling. The head of the patient is fixed in a metallic rest. Normal-speed and slow-motion photographs are made. The films have been very useful in teaching.

John C. Long.

Wheeler, J. M. **Blind people.** Trans. Amer. Acad. Ophth. and Otolaryng., 1934, 39th meeting, p. 19.

In this presidential address, Wheeler deals with the philosophy of the blind and the many opportunities and compensations given them.

George H. Stine.

NEWS ITEMS

Edited by Dr. H. Rommel Hildreth
640 S. Kingshighway, St. Louis

News items should reach the Editor by the twelfth of the month.

Deaths

Dr. George Herbert Burnham, Toronto, Ont., aged 84 years, died April 1, of pneumonia.

Dr. William Nelson Offutt, Lexington, Ky., aged 58 years, died April 3.

Dr. Frank J. Holdsworth, Traverse City, Mich., aged 60 years, died in April, of coronary thrombosis.

Miscellaneous

The Colorado Ophthalmological Society and Colorado Otolaryngological Society announce the thirteenth annual summer graduate course in ophthalmology and otolaryngology at Denver, from July 15 to July 27. The first week will be devoted to ophthalmology and the second week to otolaryngology. A meeting of the Colorado Ophthalmological Society will be held on July 20, and the Colorado Otolaryngological Society will meet on July 24. The secretary is Dr. Ralph W. Danielson, 324 Metropolitan Bldg., Denver.

The Guild of Prescription Opticians of America, Inc., held its tenth annual convention in Rochester, N.Y., on May 27, 28, 29, 1935.

Mr. William Henry Ross, a business man, has given a sum equivalent to about $200,000 to establish at Edinburgh, Scotland, a foundation for investigating the origin and causes of blindness and for utilizing the results of investigation toward prevention and cure. Mr. Ross lost the sight of both eyes a few years ago, one through a comparatively simple accident and the other from a serious illness.

For the twenty-fifth annual Clinical Congress of the American College of Surgeons, October 28 to November 1, the surgeons of San Francisco and Oakland have organized under the leadership of a representative committee with Dr. Howard C. Naffziger as chairman, and are preparing a clinical program that will adequately present the surgical activities of that medical center. Clinics at the hospitals are scheduled for Monday afternoon at 2 o'clock, and will be continued during the following four days both morning and afternoon. A comprehensive and varied program of operative clinics and demonstrations representing all departments of surgery is being prepared. This will include a special series of clinics of surgery of the eye, ear, nose and throat. The committee is also preparing programs for four morning sessions at which distinguished ophthalmologists and otolaryngologists will present and discuss subjects of clinical interest.

Programs are being arranged for five evening meetings at which eminent surgeons of the United States and Canada and a number of distinguished visitors from abroad, will present and discuss papers dealing with surgical subjects of present-day importance. Plans are being made also for conferences on cancer, fractures, and industrial medicine and traumatic surgery. The president-elect, Dr. Donald C. Balfour, of Rochester, Minnesota, will be inaugurated at the presidential meeting on Monday evening. At the annual convocation of the College on Friday evening, when the 1935 class of candidates for Fellowship will be received, the Fellowship address will be given by Dr. Robert Gordon Sproul, president of the University of California.

The eye clinic of Genoa, Italy, originally established in 1860, was recently transferred to a handsome new building, the "Institute of clinical ophthalmology," with very complete modern equipment for diagnosis, therapy, and research. Professor Maggiore continues as the head of the Clinic.

Societies

The American Association of Medical Social Workers and the National Society for the Prevention of Blindness, Inc., met in Montreal, Canada, on June 13. Presiding was Miss Jeanne Wertheimer. The program consisted of papers by: Dr. S. Hanford McKee, "Eye complications in syphilis"; Miss Lydia B. Christ, "What can the social worker in a syphilis department do to prevent loss of sight?"; Miss Jeanne Wertheimer, "In what social area can an eye worker achieve her best results with syphilitic patients?"

The seventeenth annual meeting of the North Dakota Academy of Ophthalmology and Otolaryngology was held at Minot, N.D., May 27, under the presidency of Dr. W. R. Winn of Fargo. Speakers included Dr. O. B. Nugent of Chicago, who presented an illustrated address on "Corneal ulcers and their treatment." Dr. Trygve Oftedal of Fargo was elected president for the coming year.

At its last meeting on April 25, the following men were elected as officers of the Washington, D.C., Ophthalmological Society for the next two years: Dr. James N. Greear, chairman; Dr. G. Victor Simpson, vice-chairman; Dr. Ernest Sheppard, secretary-treasurer.

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